WORLDWIDE PDB PROTEIN DATA BANK

Full wwPDB EM Validation Report (i)

Aug 4, 2024 – 12:21 AM JST

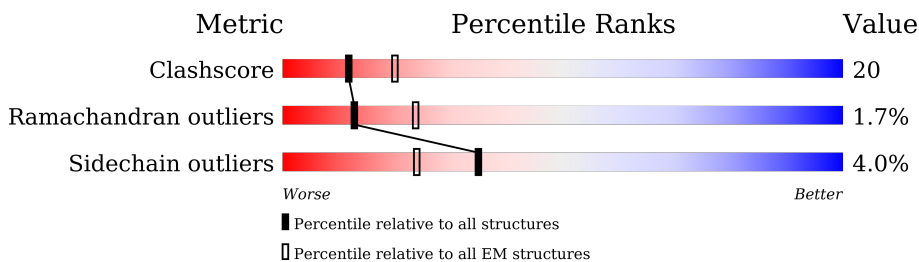|		
PDB ID	:	8XUS
EMDB ID	:	EMD-38682
Title	:	JN.1 Spike Trimer in complex with heparan sulfate
Authors	:	Yue, C.; Liu, P.
Deposited on	:	2024-01-14
Resolution	:	3.18 Å(reported)

1 Overall quality at a glance ⓘ

The following experimental techniques were used to determine the structure:
ELECTRON MICROSCOPY

The reported resolution of this entry is 3.18 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.

Metric	Percentile Ranks	Value
Clashscore		20
Ramachandran outliers		1.7%
Sidechain outliers		4.0%

Worse   *Better*

▮ Percentile relative to all structures
◫ Percentile relative to all EM structures

Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5%

Mol	Chain	Length	Quality of chain
1	A	1206	56% — 29% — · 12%
1	B	1206	57% — 29% — · 12%
1	C	1206	55% — 30% — · 12%

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2   Entry composition (i)

There are 3 unique types of molecules in this entry. The entry contains 25713 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a protein called Spike glycoprotein.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	C	1063	Total 8314	C 5319	N 1383	O 1574	S 38	0	0
1	A	1063	Total 8314	C 5319	N 1383	O 1574	S 38	0	0
1	B	1063	Total 8314	C 5319	N 1383	O 1574	S 38	0	0

There are 222 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
C	-2	ALA	-	expression tag	UNP P0DTC2
C	-1	THR	-	expression tag	UNP P0DTC2
C	16	MET	-	insertion	UNP P0DTC2
C	17	PRO	-	insertion	UNP P0DTC2
C	18	LEU	-	insertion	UNP P0DTC2
C	19	PHE	-	insertion	UNP P0DTC2
C	22	ILE	THR	variant	UNP P0DTC2
C	24	THR	ARG	variant	UNP P0DTC2
C	?	-	LEU	deletion	UNP P0DTC2
C	?	-	PRO	deletion	UNP P0DTC2
C	?	-	PRO	deletion	UNP P0DTC2
C	27	SER	ALA	variant	UNP P0DTC2
C	50	LEU	SER	conflict	UNP P0DTC2
C	?	-	HIS	deletion	UNP P0DTC2
C	?	-	VAL	deletion	UNP P0DTC2
C	127	PHE	VAL	conflict	UNP P0DTC2
C	143	ASP	GLY	variant	UNP P0DTC2
C	?	-	TYR	deletion	UNP P0DTC2
C	157	SER	PHE	conflict	UNP P0DTC2
C	158	GLY	ARG	variant	UNP P0DTC2
C	?	-	ASN	deletion	UNP P0DTC2
C	212	ILE	LEU	variant	UNP P0DTC2
C	213	GLY	VAL	variant	UNP P0DTC2
C	216	PHE	LEU	conflict	UNP P0DTC2

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Chain	Residue	Modelled	Actual	Comment	Reference
C	245	ASN	HIS	conflict	UNP P0DTC2
C	264	ASP	ALA	conflict	UNP P0DTC2
C	332	VAL	ILE	conflict	UNP P0DTC2
C	339	HIS	GLY	variant	UNP P0DTC2
C	356	THR	LYS	conflict	UNP P0DTC2
C	371	PHE	SER	variant	UNP P0DTC2
C	373	PRO	SER	variant	UNP P0DTC2
C	375	PHE	SER	variant	UNP P0DTC2
C	376	ALA	THR	variant	UNP P0DTC2
C	403	LYS	ARG	conflict	UNP P0DTC2
C	405	ASN	ASP	variant	UNP P0DTC2
C	408	SER	ARG	variant	UNP P0DTC2
C	417	ASN	LYS	variant	UNP P0DTC2
C	440	LYS	ASN	variant	UNP P0DTC2
C	445	HIS	VAL	conflict	UNP P0DTC2
C	446	SER	GLY	variant	UNP P0DTC2
C	450	ASP	ASN	conflict	UNP P0DTC2
C	452	TRP	LEU	conflict	UNP P0DTC2
C	455	SER	LEU	conflict	UNP P0DTC2
C	460	LYS	ASN	variant	UNP P0DTC2
C	477	ASN	SER	variant	UNP P0DTC2
C	478	LYS	THR	variant	UNP P0DTC2
C	481	LYS	ASN	conflict	UNP P0DTC2
C	?	-	VAL	deletion	UNP P0DTC2
C	484	LYS	GLU	variant	UNP P0DTC2
C	486	PRO	PHE	variant	UNP P0DTC2
C	498	ARG	GLN	variant	UNP P0DTC2
C	501	TYR	ASN	variant	UNP P0DTC2
C	505	HIS	TYR	variant	UNP P0DTC2
C	554	LYS	GLU	conflict	UNP P0DTC2
C	570	VAL	ALA	conflict	UNP P0DTC2
C	614	GLY	ASP	variant	UNP P0DTC2
C	621	SER	PRO	conflict	UNP P0DTC2
C	655	TYR	HIS	variant	UNP P0DTC2
C	679	LYS	ASN	variant	UNP P0DTC2
C	681	ARG	PRO	variant	UNP P0DTC2
C	683	ALA	ARG	conflict	UNP P0DTC2
C	685	ALA	ARG	conflict	UNP P0DTC2
C	764	LYS	ASN	variant	UNP P0DTC2
C	796	TYR	ASP	variant	UNP P0DTC2
C	817	PRO	PHE	conflict	UNP P0DTC2
C	892	PRO	ALA	conflict	UNP P0DTC2

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Chain	Residue	Modelled	Actual	Comment	Reference
C	899	PRO	ALA	conflict	UNP P0DTC2
C	939	PHE	SER	conflict	UNP P0DTC2
C	942	PRO	ALA	conflict	UNP P0DTC2
C	954	HIS	GLN	variant	UNP P0DTC2
C	969	LYS	ASN	variant	UNP P0DTC2
C	986	PRO	LYS	variant	UNP P0DTC2
C	987	PRO	VAL	variant	UNP P0DTC2
C	1143	LEU	PRO	conflict	UNP P0DTC2
A	-2	ALA	-	expression tag	UNP P0DTC2
A	-1	THR	-	expression tag	UNP P0DTC2
A	16	MET	-	insertion	UNP P0DTC2
A	17	PRO	-	insertion	UNP P0DTC2
A	18	LEU	-	insertion	UNP P0DTC2
A	19	PHE	-	insertion	UNP P0DTC2
A	22	ILE	THR	variant	UNP P0DTC2
A	24	THR	ARG	variant	UNP P0DTC2
A	?	-	LEU	deletion	UNP P0DTC2
A	?	-	PRO	deletion	UNP P0DTC2
A	?	-	PRO	deletion	UNP P0DTC2
A	27	SER	ALA	variant	UNP P0DTC2
A	50	LEU	SER	conflict	UNP P0DTC2
A	?	-	HIS	deletion	UNP P0DTC2
A	?	-	VAL	deletion	UNP P0DTC2
A	127	PHE	VAL	conflict	UNP P0DTC2
A	143	ASP	GLY	variant	UNP P0DTC2
A	?	-	TYR	deletion	UNP P0DTC2
A	157	SER	PHE	conflict	UNP P0DTC2
A	158	GLY	ARG	variant	UNP P0DTC2
A	?	-	ASN	deletion	UNP P0DTC2
A	212	ILE	LEU	variant	UNP P0DTC2
A	213	GLY	VAL	variant	UNP P0DTC2
A	216	PHE	LEU	conflict	UNP P0DTC2
A	245	ASN	HIS	conflict	UNP P0DTC2
A	264	ASP	ALA	conflict	UNP P0DTC2
A	332	VAL	ILE	conflict	UNP P0DTC2
A	339	HIS	GLY	variant	UNP P0DTC2
A	356	THR	LYS	conflict	UNP P0DTC2
A	371	PHE	SER	variant	UNP P0DTC2
A	373	PRO	SER	variant	UNP P0DTC2
A	375	PHE	SER	variant	UNP P0DTC2
A	376	ALA	THR	variant	UNP P0DTC2
A	403	LYS	ARG	conflict	UNP P0DTC2

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Chain	Residue	Modelled	Actual	Comment	Reference
A	405	ASN	ASP	variant	UNP P0DTC2
A	408	SER	ARG	variant	UNP P0DTC2
A	417	ASN	LYS	variant	UNP P0DTC2
A	440	LYS	ASN	variant	UNP P0DTC2
A	445	HIS	VAL	conflict	UNP P0DTC2
A	446	SER	GLY	variant	UNP P0DTC2
A	450	ASP	ASN	conflict	UNP P0DTC2
A	452	TRP	LEU	conflict	UNP P0DTC2
A	455	SER	LEU	conflict	UNP P0DTC2
A	460	LYS	ASN	variant	UNP P0DTC2
A	477	ASN	SER	variant	UNP P0DTC2
A	478	LYS	THR	variant	UNP P0DTC2
A	481	LYS	ASN	conflict	UNP P0DTC2
A	?	-	VAL	deletion	UNP P0DTC2
A	484	LYS	GLU	variant	UNP P0DTC2
A	486	PRO	PHE	variant	UNP P0DTC2
A	498	ARG	GLN	variant	UNP P0DTC2
A	501	TYR	ASN	variant	UNP P0DTC2
A	505	HIS	TYR	variant	UNP P0DTC2
A	554	LYS	GLU	conflict	UNP P0DTC2
A	570	VAL	ALA	conflict	UNP P0DTC2
A	614	GLY	ASP	variant	UNP P0DTC2
A	621	SER	PRO	conflict	UNP P0DTC2
A	655	TYR	HIS	variant	UNP P0DTC2
A	679	LYS	ASN	variant	UNP P0DTC2
A	681	ARG	PRO	variant	UNP P0DTC2
A	683	ALA	ARG	conflict	UNP P0DTC2
A	685	ALA	ARG	conflict	UNP P0DTC2
A	764	LYS	ASN	variant	UNP P0DTC2
A	796	TYR	ASP	variant	UNP P0DTC2
A	817	PRO	PHE	conflict	UNP P0DTC2
A	892	PRO	ALA	conflict	UNP P0DTC2
A	899	PRO	ALA	conflict	UNP P0DTC2
A	939	PHE	SER	conflict	UNP P0DTC2
A	942	PRO	ALA	conflict	UNP P0DTC2
A	954	HIS	GLN	variant	UNP P0DTC2
A	969	LYS	ASN	variant	UNP P0DTC2
A	986	PRO	LYS	variant	UNP P0DTC2
A	987	PRO	VAL	variant	UNP P0DTC2
A	1143	LEU	PRO	conflict	UNP P0DTC2
B	-2	ALA	-	expression tag	UNP P0DTC2
B	-1	THR	-	expression tag	UNP P0DTC2

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Chain	Residue	Modelled	Actual	Comment	Reference
B	16	MET	-	insertion	UNP P0DTC2
B	17	PRO	-	insertion	UNP P0DTC2
B	18	LEU	-	insertion	UNP P0DTC2
B	19	PHE	-	insertion	UNP P0DTC2
B	22	ILE	THR	variant	UNP P0DTC2
B	24	THR	ARG	variant	UNP P0DTC2
B	?	-	LEU	deletion	UNP P0DTC2
B	?	-	PRO	deletion	UNP P0DTC2
B	?	-	PRO	deletion	UNP P0DTC2
B	27	SER	ALA	variant	UNP P0DTC2
B	50	LEU	SER	conflict	UNP P0DTC2
B	?	-	HIS	deletion	UNP P0DTC2
B	?	-	VAL	deletion	UNP P0DTC2
B	127	PHE	VAL	conflict	UNP P0DTC2
B	143	ASP	GLY	variant	UNP P0DTC2
B	?	-	TYR	deletion	UNP P0DTC2
B	157	SER	PHE	conflict	UNP P0DTC2
B	158	GLY	ARG	variant	UNP P0DTC2
B	?	-	ASN	deletion	UNP P0DTC2
B	212	ILE	LEU	variant	UNP P0DTC2
B	213	GLY	VAL	variant	UNP P0DTC2
B	216	PHE	LEU	conflict	UNP P0DTC2
B	245	ASN	HIS	conflict	UNP P0DTC2
B	264	ASP	ALA	conflict	UNP P0DTC2
B	332	VAL	ILE	conflict	UNP P0DTC2
B	339	HIS	GLY	variant	UNP P0DTC2
B	356	THR	LYS	conflict	UNP P0DTC2
B	371	PHE	SER	variant	UNP P0DTC2
B	373	PRO	SER	variant	UNP P0DTC2
B	375	PHE	SER	variant	UNP P0DTC2
B	376	ALA	THR	variant	UNP P0DTC2
B	403	LYS	ARG	conflict	UNP P0DTC2
B	405	ASN	ASP	variant	UNP P0DTC2
B	408	SER	ARG	variant	UNP P0DTC2
B	417	ASN	LYS	variant	UNP P0DTC2
B	440	LYS	ASN	variant	UNP P0DTC2
B	445	HIS	VAL	conflict	UNP P0DTC2
B	446	SER	GLY	variant	UNP P0DTC2
B	450	ASP	ASN	conflict	UNP P0DTC2
B	452	TRP	LEU	conflict	UNP P0DTC2
B	455	SER	LEU	conflict	UNP P0DTC2
B	460	LYS	ASN	variant	UNP P0DTC2

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Chain	Residue	Modelled	Actual	Comment	Reference
B	477	ASN	SER	variant	UNP P0DTC2
B	478	LYS	THR	variant	UNP P0DTC2
B	481	LYS	ASN	conflict	UNP P0DTC2
B	?	-	VAL	deletion	UNP P0DTC2
B	484	LYS	GLU	variant	UNP P0DTC2
B	486	PRO	PHE	variant	UNP P0DTC2
B	498	ARG	GLN	variant	UNP P0DTC2
B	501	TYR	ASN	variant	UNP P0DTC2
B	505	HIS	TYR	variant	UNP P0DTC2
B	554	LYS	GLU	conflict	UNP P0DTC2
B	570	VAL	ALA	conflict	UNP P0DTC2
B	614	GLY	ASP	variant	UNP P0DTC2
B	621	SER	PRO	conflict	UNP P0DTC2
B	655	TYR	HIS	variant	UNP P0DTC2
B	679	LYS	ASN	variant	UNP P0DTC2
B	681	ARG	PRO	variant	UNP P0DTC2
B	683	ALA	ARG	conflict	UNP P0DTC2
B	685	ALA	ARG	conflict	UNP P0DTC2
B	764	LYS	ASN	variant	UNP P0DTC2
B	796	TYR	ASP	variant	UNP P0DTC2
B	817	PRO	PHE	conflict	UNP P0DTC2
B	892	PRO	ALA	conflict	UNP P0DTC2
B	899	PRO	ALA	conflict	UNP P0DTC2
B	939	PHE	SER	conflict	UNP P0DTC2
B	942	PRO	ALA	conflict	UNP P0DTC2
B	954	HIS	GLN	variant	UNP P0DTC2
B	969	LYS	ASN	variant	UNP P0DTC2
B	986	PRO	LYS	variant	UNP P0DTC2
B	987	PRO	VAL	variant	UNP P0DTC2
B	1143	LEU	PRO	conflict	UNP P0DTC2

- Molecule 2 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula: $C_8H_{15}NO_6$).
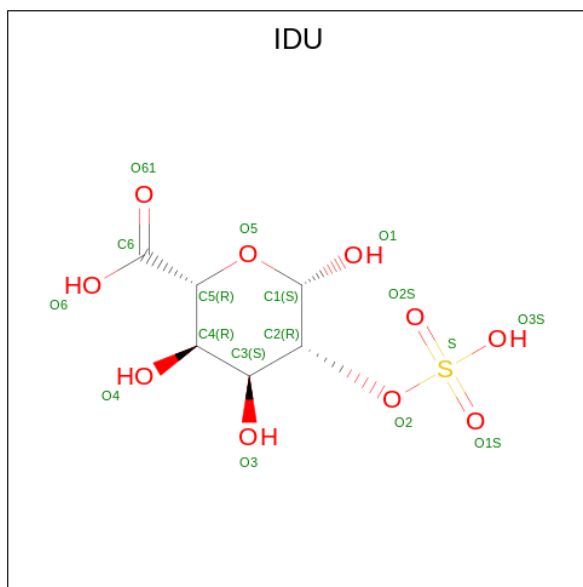
NAG

O6
OH

O1
HO
O5
O

C6

C1(R)　C5(R)

C2(R)　C4(S)
C3(R)

N2
HN
OH
O4

C7
OH

C8
O
O7
O3

Mol	Chain	Residues	Atoms				AltConf
2	C	1	Total	C	N	O	0
			14	8	1	5	
2	C	1	Total	C	N	O	0
			14	8	1	5	
2	C	1	Total	C	N	O	0
			14	8	1	5	
2	C	1	Total	C	N	O	0
			14	8	1	5	
2	C	1	Total	C	N	O	0
			14	8	1	5	
2	C	1	Total	C	N	O	0
			14	8	1	5	
2	C	1	Total	C	N	O	0
			14	8	1	5	
2	C	1	Total	C	N	O	0
			14	8	1	5	
2	C	1	Total	C	N	O	0
			14	8	1	5	
2	C	1	Total	C	N	O	0
			14	8	1	5	
2	C	1	Total	C	N	O	0
			14	8	1	5	
2	C	1	Total	C	N	O	0
			14	8	1	5	
2	C	1	Total	C	N	O	0
			14	8	1	5	
2	C	1	Total	C	N	O	0
			14	8	1	5	

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Mol	Chain	Residues	Atoms				AltConf
2	C	1	Total	C	N	O	0
			14	8	1	5	
2	C	1	Total	C	N	O	0
			14	8	1	5	
2	C	1	Total	C	N	O	0
			14	8	1	5	
2	C	1	Total	C	N	O	0
			14	8	1	5	
2	A	1	Total	C	N	O	0
			14	8	1	5	
2	A	1	Total	C	N	O	0
			14	8	1	5	
2	A	1	Total	C	N	O	0
			14	8	1	5	
2	A	1	Total	C	N	O	0
			14	8	1	5	
2	A	1	Total	C	N	O	0
			14	8	1	5	
2	A	1	Total	C	N	O	0
			14	8	1	5	
2	A	1	Total	C	N	O	0
			14	8	1	5	
2	A	1	Total	C	N	O	0
			14	8	1	5	
2	A	1	Total	C	N	O	0
			14	8	1	5	
2	A	1	Total	C	N	O	0
			14	8	1	5	
2	A	1	Total	C	N	O	0
			14	8	1	5	
2	A	1	Total	C	N	O	0
			14	8	1	5	
2	A	1	Total	C	N	O	0
			14	8	1	5	
2	A	1	Total	C	N	O	0
			14	8	1	5	
2	A	1	Total	C	N	O	0
			14	8	1	5	
2	A	1	Total	C	N	O	0
			14	8	1	5	

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Mol	Chain	Residues	Atoms				AltConf
2	A	1	Total 14	C 8	N 1	O 5	0
2	B	1	Total 14	C 8	N 1	O 5	0
2	B	1	Total 14	C 8	N 1	O 5	0
2	B	1	Total 14	C 8	N 1	O 5	0
2	B	1	Total 14	C 8	N 1	O 5	0
2	B	1	Total 14	C 8	N 1	O 5	0
2	B	1	Total 14	C 8	N 1	O 5	0
2	B	1	Total 14	C 8	N 1	O 5	0
2	B	1	Total 14	C 8	N 1	O 5	0
2	B	1	Total 14	C 8	N 1	O 5	0
2	B	1	Total 14	C 8	N 1	O 5	0
2	B	1	Total 14	C 8	N 1	O 5	0
2	B	1	Total 14	C 8	N 1	O 5	0
2	B	1	Total 14	C 8	N 1	O 5	0
2	B	1	Total 14	C 8	N 1	O 5	0
2	B	1	Total 14	C 8	N 1	O 5	0
2	B	1	Total 14	C 8	N 1	O 5	0
2	B	1	Total 14	C 8	N 1	O 5	0
2	B	1	Total 14	C 8	N 1	O 5	0

- Molecule 3 is 2-O-sulfo-beta-L-altropyranuronic acid (three-letter code: IDU) (formula: $C_6H_{10}O_{10}S$) (labeled as "Ligand of Interest" by depositor).

IDU

Mol	Chain	Residues	Atoms				AltConf
3	B	1	Total	C	O	S	0
			15	6	8	1	

Full wwPDB EM Validation Report

3 Residue-property plots ⓘ

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

• Molecule 1: Spike glycoprotein

Chain C:

L1004 Q1005 T1006 L1012 I1013 M1029 V1033 Q1036 S1037 L1049 F1052 P1053 Q1054 P1057 V1061 E1072 F1075 T1076 T1077 A1078 P1079 C1082 H1083 E1092 V1096 S1097 T1100 H1101 V1129 G1131 I1132 T1136 V1137 Q1142 L1143 E1144 LEU ASP PHE LYS GLU

GLU LEU ASP TYR PHE LYS ASN HIS SER PRO VAL ASP VAL GLY ASP LEU GLY ASP ILE SER GLY ILE ILE ASN ALA SER VAL VAL ASN ILE GLN LYS GLU ILE ASP ARG LEU ASN GLU VAL ALA LYS ASN LEU ASN GLU SER LEU ILE ASP LEU GLN GLU LEU GLY LYS TYR GLU GLN

• Molecule 1: Spike glycoprotein

Chain A:

ALA THR MET PHE VAL PHE LEU VAL LEU LEU PRO LEU VAL SER SER GLN CYS VAL MET PRO LEU PHE ASN LEU ILE T23 T24 T25 T29 N30 S31 R34 Y37 D40 K41 V42 F43 R44 V47 L48 F55 L56 P57 N61 V62 F65 H66 A67 I68 SER GLY THR

ASN GLY THR LYS ARG PHE D80 N81 L84 E96 K97 S98 N99 I100 I101 R102 G103 F106 G107 T108 T109 L110 K113 T114 Q115 S116 L117 L118 L119 V120 N121 N122 N125 V126 F127 I128 K129 V130 C131 E132 F133 Q134 F135 C136 N137 D138 PRO PHE LEU ASP VAL TYR HIS LYS ASN

ASN LYS SER TRP MET GLU GLU SER G158 V159 Y160 S161 S162 A163 N164 N165 C166 T167 F168 E169 F175 L176 M177 D178 G184 N188 L189 R190 E191 Y200 K206 H207 P209 I210 I212 G213 R214 D215 F216 P217 Q218 G219 F220 L223 L229 P230 I233 N234 I235

F238 Q239 T240 L244 N245 R246 SER TYR LEU THR PRO GLY ASP SER SER SER GLY TRP THR ALA GLY ALA A263 D264 Y265 V266 V267 R273 L276 L277 K278 G283 T284 D290 L296 S297 L303 K304 S305 T306 T307 V308 E309 K310 G311 I312 Y313 F318 R319 V320 Q321 P322

T323 E324 S325 I326 V327 R328 F329 P330 N331 N334 L335 C336 P337 F338 H339 E340 V341 F342 N343 A344 T345 S346 F347 A348 S349 V350 Y351 A352 T356 R357 I358 S359 N360 A363 D364 V365 S366 V367 F374 F375 A376 F377 K378 C379 V382 S383 P384 T385 K386 L387 N388 D389 L390 V395

Y396 A397 D398 S399 I402 K403 E406 Q409 I410 A411 P412 G413 Q414 I418 Y421 M422 Y423 K424 F429 C432 V433 I434 A435 W436 N439 K440 L441 D442 S443 G447 D450 Y451 W452 Y453 R454 S455 F456 R457 D467 A475 N487 P491 Y495 G496 F497

R498 Y501 G502 V503 G504 H505 Q506 P507 Y508 R509 V510 V511 V512 L513 S514 F515 E516 L517 L518 H519 A520 P521 A522 T523 V524 P527 K528 K529 S530 T531 N532 K535 N536 V539 N540 F541 N542 L552 T553 K554 K557 K558 F559 L560 P561 F562 Q563 Q564 F565 G566 R567 V570 D571

D574 Q580 T581 L582 E583 I587 T588 P589 F592 G593 T602 D627 Q628 L629 T630 T632 W633 R634 C662 D663 I664 Q675 T676 Q677 THR LYS SER ARG ALA ALA ALA SER VAL ALA S689 I693 M697 L699 N703 S704 V705 A706 Y707 S708 N709

F718 T719 I720 I726 V736 D737 C738 T739 M740 Y741 I742 C743 G744 D745 S746 C749 L752 Q755 F759 C760 T761 Q762 L763 K764 R765 I770 E780 Q784 P792 Y796 F802 S803 Q804 I805 L806 F823 V826 L841 I844 R847 C851 A852

G857 L858 Y873 L878 A879 G880 T881 I882 T883 S884 A903 Y904 R905 F906 N907 G908 Q913 L916 Y917 E918 N919 I923 F927 A930 I931 G932 K933 I934 F939 P942 L945 G946 K947 L948 Q949 D950 Q957 A958 L959 N960 T961 L962 V963 K964 Q965 S968

G971 A972 I973 S974 S975 V976 D979 R983 L984 P987 E988 A989 Q992 I993 D994 I997 R1000 L1001 G1002 S1003 L1004 Q1005 T1006 L1012 I1013 M1029 V1033 Q1036 S1037 L1049 F1052 P1053 Q1054 P1057 V1061 E1072 T1076 P1079 C1082 H1083

K1086 E1092 V1096 S1097 T1100 H1101 Q1106 I1114 V1129 I1132 T1136 V1137 Q1142 L1143 E1144 LEU ASP SER PHE LYS GLU GLU LEU ASP LYS TYR PHE LYS ASN HIS THR SER PRO ASP VAL VAL ASP LEU GLY ASP ILE SER GLY ILE ILE ASN ALA SER VAL VAL ASN ILE GLN

LYS GLU ILE ASP ARG LEU ASN GLU VAL ALA LYS ASN LEU ASN GLU SER LEU ILE ASP LEU GLN GLU LEU GLY LYS TYR GLU GLU GLN

• Molecule 1: Spike glycoprotein

Chain B:

4 Experimental information ⓘ

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	301841	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING ONLY	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose $(e^-/\text{Å}^2)$	60	Depositor
Minimum defocus (nm)	1200	Depositor
Maximum defocus (nm)	2000	Depositor
Magnification	Not provided	
Image detector	FEI FALCON IV (4k x 4k)	Depositor

5   Model quality ⓘ

5.1   Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: NAG, IDU

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#$|Z|$ >5	RMSZ	#$|Z|$ >5
1	A	0.44	0/8514	0.60	0/11588
1	B	0.45	0/8514	0.60	0/11588
1	C	0.44	0/8514	0.60	0/11588
All	All	0.44	0/25542	0.60	0/34764

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand.A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	2
1	B	0	3
1	C	0	4
All	All	0	9

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (9) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	328	ARG	Sidechain
1	A	346	ARG	Sidechain
1	B	319	ARG	Sidechain
1	B	328	ARG	Sidechain
1	B	346	ARG	Sidechain
1	C	328	ARG	Sidechain
1	C	346	ARG	Sidechain

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Mol	Chain	Res	Type	Group
1	C	567	ARG	Sidechain
1	C	577	ARG	Sidechain

5.2 Too-close contacts ⓘ

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	8314	0	8094	383	0
1	B	8314	0	8094	363	0
1	C	8314	0	8094	396	0
2	A	252	0	234	6	0
2	B	252	0	234	5	0
2	C	252	0	234	10	0
3	B	15	0	4	1	0
All	All	25713	0	24988	993	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 20.

All (993) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:430:THR:CG2	1:C:517:LEU:HD12	1.63	1.26
1:C:503:VAL:CG2	1:A:505:HIS:CE1	2.20	1.25
1:C:759:PHE:HZ	1:A:1002:GLN:CG	1.49	1.24
1:A:503:VAL:CG2	1:B:505:HIS:CE1	2.21	1.23
1:A:759:PHE:HZ	1:B:1002:GLN:CG	1.56	1.17
1:C:1002:GLN:HG3	1:B:759:PHE:HZ	1.07	1.16
1:C:759:PHE:CZ	1:A:1002:GLN:HG3	1.80	1.16
1:C:503:VAL:HG21	1:A:505:HIS:CE1	1.78	1.15
1:C:1002:GLN:HG3	1:B:759:PHE:CZ	1.81	1.15
1:C:430:THR:HG21	1:C:517:LEU:HD12	1.25	1.15
1:A:759:PHE:CZ	1:B:1002:GLN:HG3	1.82	1.14
1:C:505:HIS:CE1	1:B:503:VAL:CG2	2.29	1.14
1:C:503:VAL:HG21	1:A:505:HIS:HE1	1.00	1.13
1:C:505:HIS:HE1	1:B:503:VAL:HG21	1.06	1.13

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:759:PHE:HZ	1:B:1002:GLN:HG3	1.05	1.13
1:A:503:VAL:HG21	1:B:505:HIS:CE1	1.78	1.13
1:A:841:LEU:HB2	1:B:553:THR:HG21	1.22	1.12
1:C:1002:GLN:CG	1:B:759:PHE:HZ	1.63	1.12
1:C:326:ILE:HD11	1:C:534:VAL:HG23	1.19	1.11
1:C:759:PHE:HZ	1:A:1002:GLN:HG3	1.02	1.11
1:C:755:GLN:OE1	1:A:971:GLY:HA2	1.51	1.10
1:C:553:THR:HG21	1:B:841:LEU:HB2	1.13	1.09
1:C:759:PHE:CZ	1:A:1002:GLN:CG	2.33	1.09
1:A:503:VAL:HG21	1:B:505:HIS:HE1	0.97	1.09
1:C:971:GLY:HA2	1:B:755:GLN:OE1	1.51	1.08
1:A:759:PHE:CZ	1:B:1002:GLN:CG	2.38	1.07
1:A:755:GLN:OE1	1:B:971:GLY:HA2	1.54	1.07
1:C:983:ARG:CD	1:A:517:LEU:HD13	1.85	1.06
1:C:505:HIS:HE1	1:B:503:VAL:CG2	1.65	1.06
1:A:503:VAL:CG2	1:B:505:HIS:HE1	1.64	1.06
1:A:841:LEU:HB2	1:B:553:THR:CG2	1.88	1.03
1:C:505:HIS:CE1	1:B:503:VAL:HG21	1.92	1.03
1:A:903:ALA:HB1	1:A:913:GLN:HB3	1.42	1.02
1:C:1083:HIS:ND1	1:C:1137:VAL:HG22	1.74	1.02
1:B:1083:HIS:ND1	1:B:1137:VAL:HG22	1.74	1.02
1:C:553:THR:CG2	1:B:841:LEU:HB2	1.90	1.02
1:C:1002:GLN:CG	1:B:759:PHE:CZ	2.40	1.02
1:A:1083:HIS:ND1	1:A:1137:VAL:HG22	1.74	1.01
1:A:983:ARG:CD	1:B:517:LEU:HD13	1.90	1.00
1:C:1083:HIS:CG	1:C:1137:VAL:HG22	1.97	1.00
1:B:1083:HIS:CG	1:B:1137:VAL:HG22	1.97	0.99
1:C:503:VAL:CG2	1:A:505:HIS:HE1	1.64	0.99
1:A:1083:HIS:CG	1:A:1137:VAL:HG22	1.97	0.98
1:C:326:ILE:HD13	1:C:533:LEU:HA	1.47	0.95
1:C:983:ARG:HD3	1:A:517:LEU:HD13	1.45	0.95
1:C:841:LEU:HB2	1:A:553:THR:HG21	1.48	0.94
1:A:983:ARG:HD3	1:B:517:LEU:HD13	1.50	0.93
1:C:382:VAL:HG11	1:C:387:LEU:HD13	1.50	0.92
1:A:503:VAL:HG23	1:B:505:HIS:CE1	2.06	0.90
1:C:505:HIS:CE1	1:B:503:VAL:HG23	2.04	0.89
1:C:62:VAL:HG11	1:C:216:PHE:HE2	1.36	0.88
1:A:62:VAL:HG11	1:A:216:PHE:HE2	1.36	0.88
1:B:300:LYS:HG2	1:B:308:VAL:HG23	1.55	0.87
1:B:559:PHE:HB2	1:B:584:ILE:HD11	1.56	0.87
1:C:503:VAL:HG23	1:A:505:HIS:CE1	2.07	0.87

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:322:PRO:HG2	1:B:540:ASN:HD21	1.40	0.86
1:C:326:ILE:HD11	1:C:534:VAL:CG2	2.06	0.86
1:C:329:PHE:HB3	1:C:330:PRO:CD	2.06	0.86
1:A:329:PHE:HB3	1:A:330:PRO:HD2	1.58	0.85
1:C:553:THR:HG21	1:B:841:LEU:CB	2.02	0.85
1:A:841:LEU:CB	1:B:553:THR:HG21	2.04	0.85
1:A:322:PRO:HG2	1:A:540:ASN:HD21	1.40	0.85
1:C:322:PRO:HG2	1:C:540:ASN:HD21	1.40	0.85
1:A:326:ILE:HD12	1:A:532:ASN:O	1.76	0.84
1:B:326:ILE:CG2	1:B:532:ASN:O	2.26	0.84
1:B:326:ILE:HD12	1:B:532:ASN:O	1.76	0.84
1:B:557:LYS:HD3	1:B:559:PHE:HE1	1.43	0.83
1:C:1082:CYS:HB2	1:C:1132:ILE:HG13	1.58	0.83
1:B:329:PHE:HB3	1:B:330:PRO:HD2	1.61	0.83
1:A:326:ILE:CG2	1:A:532:ASN:O	2.26	0.83
1:C:759:PHE:CZ	1:A:1002:GLN:HG2	2.14	0.82
1:B:326:ILE:HG23	1:B:532:ASN:O	1.80	0.82
1:C:983:ARG:HD2	1:A:517:LEU:HD13	1.60	0.81
1:A:983:ARG:HD2	1:B:517:LEU:HD13	1.63	0.81
1:A:326:ILE:HG23	1:A:532:ASN:O	1.80	0.81
1:B:325:SER:HA	1:B:539:VAL:HG13	1.63	0.81
1:B:1082:CYS:HB2	1:B:1132:ILE:HG13	1.61	0.81
1:A:325:SER:HA	1:A:539:VAL:HG13	1.63	0.81
1:C:326:ILE:HD13	1:C:533:LEU:CA	2.11	0.80
1:C:325:SER:HA	1:C:539:VAL:HG13	1.63	0.80
1:A:1082:CYS:HB2	1:A:1132:ILE:HG13	1.62	0.80
1:C:838:GLY:HA3	2:A:1309:NAG:H81	1.62	0.79
1:B:1083:HIS:ND1	1:B:1137:VAL:CG2	2.46	0.79
1:C:328:ARG:HG3	1:C:530:SER:HB2	1.66	0.78
1:A:328:ARG:HG3	1:A:530:SER:HB2	1.65	0.78
1:B:328:ARG:HG3	1:B:530:SER:HB2	1.66	0.78
1:C:1083:HIS:ND1	1:C:1137:VAL:CG2	2.46	0.77
1:A:1083:HIS:ND1	1:A:1137:VAL:CG2	2.46	0.77
1:C:178:ASP:HA	1:C:188:ASN:HD21	1.49	0.77
1:A:503:VAL:HG23	1:B:505:HIS:NE2	1.99	0.77
1:C:329:PHE:HB3	1:C:330:PRO:HD3	1.66	0.76
1:A:322:PRO:HG2	1:A:540:ASN:ND2	2.01	0.76
1:C:310:LYS:HG2	1:C:664:ILE:HD11	1.68	0.76
1:C:802:PHE:H	2:C:1313:NAG:H82	1.49	0.76
1:C:322:PRO:HG2	1:C:540:ASN:ND2	2.01	0.76
1:A:310:LYS:HG2	1:A:664:ILE:HD11	1.68	0.76

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:417:ASN:O	1:C:422:ASN:ND2	2.20	0.75
1:B:310:LYS:HG2	1:B:664:ILE:HD11	1.68	0.75
1:B:322:PRO:HG2	1:B:540:ASN:ND2	2.01	0.75
1:C:788:ILE:HD11	1:A:699:LEU:HB2	1.67	0.75
1:A:62:VAL:HG11	1:A:216:PHE:CE2	2.21	0.75
1:C:503:VAL:HG23	1:A:505:HIS:NE2	2.02	0.75
1:C:707:TYR:HD1	1:B:792:PRO:HG3	1.52	0.75
1:C:62:VAL:HG11	1:C:216:PHE:CE2	2.21	0.75
2:C:1311:NAG:H62	1:B:796:TYR:CD2	2.22	0.75
1:A:37:TYR:HA	1:A:223:LEU:HB2	1.69	0.74
1:A:759:PHE:CZ	1:B:1002:GLN:HG2	2.22	0.73
1:A:43:PHE:HA	1:B:563:GLN:OE1	1.88	0.73
1:A:557:LYS:HD3	1:A:559:PHE:HE1	1.52	0.73
1:C:983:ARG:HD2	1:A:517:LEU:CD1	2.18	0.73
1:C:430:THR:HG22	1:C:517:LEU:HD12	1.64	0.73
1:C:365:TYR:CE2	1:C:387:LEU:HG	2.24	0.73
1:B:577:ARG:HG2	1:B:584:ILE:HG12	1.71	0.73
1:C:430:THR:CG2	1:C:517:LEU:CD1	2.57	0.72
1:C:330:PRO:HG2	1:C:332:VAL:HG22	1.71	0.72
1:C:503:VAL:CB	1:A:505:HIS:CE1	2.72	0.72
1:C:983:ARG:CD	1:A:517:LEU:CD1	2.67	0.72
1:B:65:PHE:HB2	1:B:265:TYR:HB3	1.72	0.71
1:A:65:PHE:HB2	1:A:265:TYR:HB3	1.72	0.71
1:C:65:PHE:HB2	1:C:265:TYR:HB3	1.72	0.71
1:C:971:GLY:CA	1:B:755:GLN:OE1	2.36	0.71
1:B:44:ARG:HB3	1:B:47:VAL:HG11	1.72	0.71
1:C:1083:HIS:CE1	1:C:1137:VAL:HG22	2.26	0.71
1:A:852:ALA:HB1	1:B:570:VAL:HG22	1.72	0.71
1:A:106:PHE:HD1	1:A:235:ILE:HD13	1.56	0.71
1:B:1083:HIS:CE1	1:B:1137:VAL:HG22	2.26	0.71
1:A:503:VAL:CG2	1:B:505:HIS:NE2	2.53	0.71
1:C:44:ARG:HB3	1:C:47:VAL:HG11	1.72	0.70
1:A:1083:HIS:CE1	1:A:1137:VAL:HG22	2.26	0.70
1:B:96:GLU:OE1	1:B:100:ILE:N	2.24	0.70
1:C:43:PHE:HA	1:A:563:GLN:OE1	1.91	0.70
1:C:96:GLU:OE1	1:C:100:ILE:N	2.24	0.70
1:A:44:ARG:HB3	1:A:47:VAL:HG11	1.72	0.70
1:C:503:VAL:CG2	1:A:505:HIS:NE2	2.53	0.70
1:C:987:PRO:HD2	1:C:988:GLU:OE2	1.92	0.70
1:A:96:GLU:OE1	1:A:100:ILE:N	2.24	0.70
1:B:106:PHE:HD1	1:B:235:ILE:HD13	1.56	0.70

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:903:ALA:HB1	1:C:913:GLN:HB3	1.72	0.70
1:C:106:PHE:HD1	1:C:235:ILE:HD13	1.56	0.69
1:C:326:ILE:CD1	1:C:534:VAL:HG23	2.11	0.69
1:C:505:HIS:NE2	1:B:503:VAL:HG23	2.08	0.69
1:A:987:PRO:HD2	1:A:988:GLU:OE2	1.92	0.69
1:B:327:VAL:HG11	1:B:528:LYS:CE	2.23	0.69
1:B:770:ILE:HD11	1:B:1012:LEU:HD23	1.75	0.69
1:B:903:ALA:HB1	1:B:913:GLN:HB3	1.75	0.69
1:C:229:LEU:HD23	1:C:229:LEU:H	1.58	0.68
1:C:770:ILE:HD11	1:C:1012:LEU:HD23	1.75	0.68
1:C:454:ARG:NH1	1:C:467:ASP:O	2.27	0.68
1:A:43:PHE:CA	1:B:563:GLN:OE1	2.42	0.68
1:B:128:ILE:HD11	1:B:175:PHE:HZ	1.59	0.68
1:C:456:PHE:HB2	1:C:491:PRO:HA	1.75	0.68
1:C:1129:VAL:HG13	1:B:917:TYR:HB3	1.76	0.68
1:C:326:ILE:CD1	1:C:534:VAL:N	2.57	0.68
1:A:454:ARG:NH1	1:A:467:ASP:O	2.27	0.68
1:A:456:PHE:HB2	1:A:491:PRO:HA	1.75	0.68
1:A:770:ILE:HD11	1:A:1012:LEU:HD23	1.75	0.68
1:A:983:ARG:HD2	1:B:517:LEU:CD1	2.24	0.68
1:C:326:ILE:CD1	1:C:533:LEU:C	2.62	0.67
1:A:327:VAL:HG11	1:A:528:LYS:CE	2.23	0.67
1:B:456:PHE:HB2	1:B:491:PRO:HA	1.75	0.67
1:A:229:LEU:HD23	1:A:229:LEU:H	1.58	0.67
1:C:327:VAL:HG11	1:C:528:LYS:CE	2.23	0.67
1:A:350:VAL:HG21	1:A:418:ILE:HG23	1.74	0.67
1:B:129:LYS:HD2	1:B:160:TYR:CE2	2.30	0.67
1:B:454:ARG:NH1	1:B:467:ASP:O	2.27	0.67
1:C:852:ALA:HB1	1:A:570:VAL:HG22	1.77	0.66
1:A:852:ALA:HB1	1:B:570:VAL:CG2	2.26	0.66
1:B:115:GLN:HE21	1:B:233:ILE:HB	1.61	0.65
1:B:327:VAL:HG11	1:B:528:LYS:HE3	1.78	0.65
1:B:375:PHE:CD1	1:B:508:TYR:OH	2.41	0.65
1:A:379:CYS:HA	1:A:432:CYS:HA	1.79	0.65
1:A:327:VAL:HG11	1:A:528:LYS:HE3	1.78	0.65
1:C:442:ASP:OD1	1:C:509:ARG:NH2	2.30	0.65
1:A:375:PHE:CD1	1:A:508:TYR:OH	2.41	0.65
1:C:115:GLN:HE21	1:C:233:ILE:HB	1.61	0.65
1:C:327:VAL:HG11	1:C:528:LYS:HE3	1.78	0.65
1:C:128:ILE:HD11	1:C:175:PHE:HZ	1.62	0.65
1:B:442:ASP:OD1	1:B:509:ARG:NH2	2.30	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:503:VAL:HB	1:A:505:HIS:CE1	2.32	0.64
1:A:128:ILE:HD11	1:A:175:PHE:HZ	1.62	0.64
1:A:796:TYR:CD2	2:B:1311:NAG:H62	2.33	0.64
1:C:206:LYS:HB3	1:C:223:LEU:HD13	1.80	0.64
1:A:442:ASP:OD1	1:A:509:ARG:NH2	2.30	0.64
1:C:406:GLU:OE1	1:C:406:GLU:N	2.30	0.64
1:C:557:LYS:HG3	1:B:844:ILE:O	1.98	0.64
1:C:917:TYR:HB3	1:A:1129:VAL:HG13	1.80	0.64
1:C:326:ILE:CG2	1:C:532:ASN:O	2.45	0.64
1:A:983:ARG:CD	1:B:517:LEU:CD1	2.74	0.64
1:A:200:TYR:HA	1:A:230:PRO:HA	1.80	0.64
1:C:759:PHE:CE2	1:A:1002:GLN:HG2	2.33	0.64
1:C:1079:PRO:HB3	1:B:917:TYR:CE1	2.33	0.64
1:A:118:LEU:HD11	1:A:159:VAL:HB	1.80	0.64
1:C:311:GLY:HA2	1:C:664:ILE:HD12	1.81	0.63
1:A:303:LEU:HD21	1:A:308:VAL:HG12	1.79	0.63
1:C:200:TYR:HA	1:C:230:PRO:HA	1.80	0.63
1:C:852:ALA:HB1	1:A:570:VAL:CG2	2.28	0.63
1:A:503:VAL:CB	1:B:505:HIS:CE1	2.80	0.63
1:C:787:GLN:OE1	1:A:703:ASN:ND2	2.29	0.63
1:B:1076:THR:HB	1:B:1097:SER:HB3	1.81	0.63
1:C:326:ILE:HD11	1:C:533:LEU:C	2.18	0.63
1:B:311:GLY:HA2	1:B:664:ILE:HD12	1.81	0.63
1:A:792:PRO:HG3	1:B:707:TYR:HD1	1.64	0.63
1:C:556:ASN:H	1:B:844:ILE:HG23	1.64	0.63
1:A:1076:THR:HB	1:A:1097:SER:HB3	1.81	0.63
1:B:39:PRO:HG3	1:B:55:PHE:HZ	1.64	0.63
1:C:788:ILE:CD1	1:A:699:LEU:HB2	2.28	0.63
1:B:134:GLN:HG2	1:B:162:SER:HB2	1.80	0.63
1:B:300:LYS:HG2	1:B:308:VAL:CG2	2.29	0.62
1:C:796:TYR:CD2	2:A:1311:NAG:H62	2.34	0.62
1:A:398:ASP:HB2	1:A:512:VAL:HG12	1.81	0.62
1:C:821:LEU:HD11	1:C:935:GLN:HG3	1.82	0.62
1:C:136:CYS:HB2	1:C:159:VAL:HA	1.81	0.62
1:B:1100:THR:HB	2:B:1315:NAG:HN2	1.64	0.62
1:A:311:GLY:HA2	1:A:664:ILE:HD12	1.81	0.62
1:C:189:LEU:HD23	1:C:210:ILE:HA	1.81	0.62
1:A:441:LEU:HD22	1:A:509:ARG:HH12	1.65	0.62
1:A:1100:THR:HB	2:A:1315:NAG:HN2	1.65	0.62
1:C:917:TYR:CE1	1:A:1079:PRO:HB3	2.35	0.62
1:B:326:ILE:HG21	1:B:532:ASN:O	2.00	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:1002:GLN:HG2	1:B:759:PHE:CE2	2.34	0.61
1:B:1053:PRO:O	1:B:1054:GLN:NE2	2.28	0.61
1:C:276:LEU:HD11	1:C:304:LYS:HA	1.81	0.61
1:C:662:CYS:HB2	1:C:697:MET:HE3	1.82	0.61
1:A:276:LEU:HD11	1:A:304:LYS:HA	1.82	0.61
1:B:441:LEU:HD22	1:B:509:ARG:HH12	1.65	0.61
1:C:1013:ILE:HD13	1:B:1012:LEU:HB3	1.83	0.61
1:B:323:THR:OG1	1:B:324:GLU:N	2.34	0.61
1:C:441:LEU:HD22	1:C:509:ARG:HH12	1.65	0.60
1:C:1002:GLN:HG2	1:B:759:PHE:CZ	2.32	0.60
1:A:759:PHE:CE2	1:B:1002:GLN:HG2	2.35	0.60
1:B:662:CYS:HB2	1:B:697:MET:HE3	1.82	0.60
1:C:326:ILE:HG23	1:C:532:ASN:O	2.01	0.60
1:C:375:PHE:CD1	1:C:508:TYR:OH	2.42	0.60
1:C:557:LYS:HD3	1:C:559:PHE:HE1	1.65	0.60
1:C:645:THR:HG23	1:C:647:ALA:H	1.65	0.60
1:C:323:THR:OG1	1:C:324:GLU:N	2.34	0.60
1:C:564:GLN:O	1:C:565:PHE:C	2.40	0.60
1:A:34:ARG:NH1	1:A:191:GLU:OE2	2.34	0.60
1:A:323:THR:OG1	1:A:324:GLU:N	2.34	0.60
1:A:356:THR:OG1	1:A:397:ALA:HB3	2.02	0.60
1:C:431:GLY:HA2	1:C:515:PHE:CD2	2.36	0.60
1:A:513:LEU:HG	1:A:515:PHE:CE1	2.37	0.60
1:C:1002:GLN:CG	1:B:759:PHE:CE2	2.84	0.60
1:A:318:PHE:CE1	1:A:593:GLY:HA3	2.37	0.60
1:B:350:VAL:HG21	1:B:418:ILE:HG23	1.84	0.60
1:C:282:ASN:OD1	1:A:558:LYS:HG3	2.02	0.59
1:B:412:PRO:HG3	1:B:429:PHE:HB3	1.84	0.59
1:B:564:GLN:O	1:B:565:PHE:C	2.40	0.59
1:A:567:ARG:HD3	1:A:571:ASP:HA	1.84	0.59
1:A:213:GLY:O	1:A:214:ARG:HG3	2.02	0.59
1:A:564:GLN:O	1:A:565:PHE:C	2.40	0.59
1:C:627:ASP:HA	1:C:634:ARG:HH22	1.68	0.59
1:A:513:LEU:HG	1:A:515:PHE:HE1	1.67	0.59
1:A:206:LYS:HB3	1:A:223:LEU:HD13	1.83	0.59
1:C:359:SER:HA	1:C:524:VAL:HG23	1.85	0.59
1:C:841:LEU:CB	1:A:553:THR:HG21	2.29	0.59
1:C:1053:PRO:O	1:C:1054:GLN:NE2	2.28	0.59
1:B:131:CYS:HB3	1:B:133:PHE:CE2	2.38	0.59
1:B:34:ARG:NH1	1:B:191:GLU:OE2	2.34	0.59
1:B:326:ILE:H	1:B:539:VAL:HG11	1.68	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:356:THR:OG1	1:B:397:ALA:HB3	2.03	0.58
1:B:213:GLY:O	1:B:214:ARG:HG3	2.02	0.58
1:B:334:ASN:ND2	1:B:360:ASN:O	2.35	0.58
1:B:567:ARG:HD3	1:B:571:ASP:HA	1.84	0.58
1:A:326:ILE:H	1:A:539:VAL:HG11	1.68	0.58
1:A:382:VAL:HG23	1:A:517:LEU:HD11	1.84	0.58
1:A:662:CYS:HB2	1:A:697:MET:HE3	1.85	0.58
1:C:334:ASN:ND2	1:C:360:ASN:O	2.35	0.58
1:A:1053:PRO:O	1:A:1054:GLN:NE2	2.28	0.58
1:C:557:LYS:HB2	1:C:584:ILE:HG21	1.84	0.58
1:C:792:PRO:HG3	1:A:707:TYR:HD1	1.68	0.58
1:C:844:ILE:O	1:A:557:LYS:HG3	2.03	0.58
1:C:976:VAL:HG12	1:C:979:ASP:H	1.69	0.58
1:A:326:ILE:HG21	1:A:532:ASN:O	2.00	0.58
1:A:976:VAL:HG12	1:A:979:ASP:H	1.69	0.58
1:B:81:ASN:ND2	1:B:240:THR:O	2.25	0.58
1:B:421:TYR:CD1	1:B:457:ARG:HB3	2.39	0.58
1:C:326:ILE:H	1:C:539:VAL:HG11	1.68	0.58
1:B:62:VAL:HG11	1:B:216:PHE:HE2	1.68	0.58
1:C:742:ILE:HG23	1:C:1000:ARG:HB2	1.86	0.58
1:A:1142:GLN:N	1:A:1142:GLN:OE1	2.36	0.58
1:B:411:ALA:HB3	1:B:414:GLN:HG3	1.85	0.58
1:C:336:CYS:HB2	1:C:338:PHE:CE2	2.39	0.57
1:B:976:VAL:HG12	1:B:979:ASP:H	1.69	0.57
1:A:43:PHE:CB	1:B:563:GLN:OE1	2.53	0.57
1:A:847:ARG:HB2	1:A:851:CYS:CB	2.34	0.57
1:A:102:ARG:HH21	1:A:122:ASN:CA	2.18	0.57
1:B:382:VAL:HG23	1:B:517:LEU:HD11	1.86	0.57
1:C:447:GLY:HA2	1:C:498:ARG:HG2	1.87	0.57
1:C:805:ILE:HB	1:C:878:LEU:HD21	1.85	0.57
1:C:1142:GLN:OE1	1:C:1142:GLN:N	2.36	0.57
1:A:1012:LEU:HB3	1:B:1013:ILE:HD13	1.86	0.57
1:B:965:GLN:O	1:B:968:SER:OG	2.22	0.57
1:A:336:CYS:HB2	1:A:338:PHE:CE2	2.39	0.56
1:A:557:LYS:HD3	1:A:559:PHE:CE1	2.36	0.56
1:A:1144:GLU:N	1:A:1144:GLU:OE2	2.38	0.56
1:B:1142:GLN:N	1:B:1142:GLN:OE1	2.36	0.56
1:C:847:ARG:HB2	1:C:851:CYS:HB2	1.85	0.56
1:A:81:ASN:ND2	1:A:240:THR:O	2.25	0.56
1:A:136:CYS:HB2	1:A:159:VAL:HA	1.86	0.56
1:A:213:GLY:O	1:A:214:ARG:CG	2.54	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:447:GLY:HA2	1:A:498:ARG:HG2	1.87	0.56
1:B:1144:GLU:OE2	1:B:1144:GLU:N	2.38	0.56
1:C:215:ASP:O	1:C:216:PHE:C	2.44	0.56
1:A:322:PRO:CG	1:A:540:ASN:HD21	2.16	0.56
1:B:39:PRO:HG2	1:B:51:THR:HG21	1.87	0.56
1:C:505:HIS:NE2	1:B:503:VAL:CG2	2.68	0.56
1:A:334:ASN:ND2	1:A:360:ASN:O	2.35	0.56
1:B:102:ARG:HH21	1:B:122:ASN:CA	2.18	0.56
1:B:447:GLY:HA2	1:B:498:ARG:HG2	1.87	0.56
1:C:43:PHE:CA	1:A:563:GLN:OE1	2.53	0.56
1:B:336:CYS:HB2	1:B:338:PHE:CE2	2.39	0.56
1:C:503:VAL:HB	1:A:505:HIS:NE2	2.20	0.56
1:C:736:VAL:HG22	1:C:858:LEU:HD22	1.87	0.56
1:C:1144:GLU:N	1:C:1144:GLU:OE2	2.38	0.56
1:B:429:PHE:HE1	1:B:514:SER:HB2	1.71	0.56
1:C:102:ARG:HH21	1:C:122:ASN:CA	2.18	0.56
1:C:178:ASP:N	1:C:178:ASP:OD1	2.39	0.56
1:A:736:VAL:HG22	1:A:858:LEU:HD22	1.87	0.56
1:B:359:SER:HA	1:B:524:VAL:HG23	1.87	0.56
1:C:404:GLY:HA2	1:C:508:TYR:HD2	1.72	0.55
1:C:1002:GLN:NE2	1:B:759:PHE:CZ	2.74	0.55
1:A:359:SER:HA	1:A:524:VAL:HG23	1.87	0.55
1:C:102:ARG:HH21	1:C:122:ASN:HA	1.71	0.55
1:C:563:GLN:OE1	1:B:43:PHE:HA	2.06	0.55
1:B:213:GLY:O	1:B:214:ARG:CG	2.54	0.55
1:B:215:ASP:O	1:B:216:PHE:C	2.44	0.55
1:C:836:GLN:HG2	1:C:840:CYS:SG	2.47	0.55
1:C:852:ALA:CB	1:A:570:VAL:HG22	2.36	0.55
1:A:215:ASP:O	1:A:216:PHE:C	2.44	0.55
1:A:384:PRO:HA	1:A:387:LEU:HB2	1.87	0.55
1:B:847:ARG:HB2	1:B:851:CYS:HB2	1.88	0.55
1:C:34:ARG:NH1	1:C:191:GLU:OE2	2.34	0.55
1:C:102:ARG:HH12	1:C:176:LEU:HD12	1.72	0.55
1:C:358:ILE:HB	1:C:395:VAL:HB	1.89	0.55
1:C:130:VAL:HG23	1:C:168:PHE:HB3	1.87	0.55
1:A:102:ARG:HH12	1:A:176:LEU:HD12	1.72	0.55
1:A:453:TYR:CD1	1:A:495:TYR:HD1	2.24	0.55
1:A:852:ALA:CB	1:B:570:VAL:HG22	2.36	0.55
1:B:453:TYR:CD1	1:B:495:TYR:HD1	2.24	0.55
1:A:581:THR:C	1:A:583:GLU:H	2.10	0.55
1:C:41:LYS:O	1:A:563:GLN:HA	2.07	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:178:ASP:N	1:A:178:ASP:OD1	2.39	0.55
1:B:102:ARG:HH12	1:B:176:LEU:HD12	1.72	0.55
1:A:189:LEU:HG	1:A:208:THR:O	2.07	0.54
1:A:411:ALA:HB3	1:A:414:GLN:HG3	1.88	0.54
1:A:102:ARG:HH21	1:A:122:ASN:HA	1.71	0.54
1:A:880:GLY:O	1:A:884:SER:OG	2.23	0.54
1:B:570:VAL:HG23	1:B:570:VAL:O	2.08	0.54
1:C:37:TYR:HA	1:C:223:LEU:HB2	1.88	0.54
1:C:326:ILE:HD11	1:C:534:VAL:N	2.21	0.54
1:C:707:TYR:CD1	1:B:792:PRO:HG3	2.39	0.54
1:C:826:VAL:HB	1:C:1057:PRO:HG2	1.90	0.54
1:A:326:ILE:H	1:A:539:VAL:CG1	2.21	0.54
1:A:403:LYS:HD2	1:A:505:HIS:HA	1.89	0.54
1:B:826:VAL:HB	1:B:1057:PRO:HG2	1.90	0.54
1:C:1012:LEU:HB3	1:A:1013:ILE:HD13	1.88	0.54
1:A:570:VAL:O	1:A:570:VAL:HG23	2.08	0.54
1:B:975:SER:O	1:B:975:SER:OG	2.25	0.54
1:C:505:HIS:CE1	1:B:503:VAL:CB	2.91	0.54
1:A:43:PHE:HB2	1:B:563:GLN:OE1	2.08	0.54
1:A:503:VAL:HB	1:B:505:HIS:CE1	2.43	0.54
1:B:329:PHE:HB3	1:B:330:PRO:CD	2.36	0.54
1:C:418:ILE:H	1:C:418:ILE:HD12	1.72	0.54
1:B:736:VAL:HG22	1:B:858:LEU:HD22	1.88	0.54
1:C:720:ILE:HD12	1:C:923:ILE:HD11	1.90	0.54
1:A:742:ILE:HG23	1:A:1000:ARG:HB2	1.88	0.54
1:B:102:ARG:HH21	1:B:122:ASN:HA	1.71	0.54
1:B:475:ALA:HB3	1:B:487:ASN:HB3	1.90	0.54
1:C:62:VAL:CG1	1:C:216:PHE:HE2	2.15	0.54
1:C:453:TYR:CD1	1:C:495:TYR:HD1	2.24	0.54
1:A:560:LEU:O	1:A:562:PHE:N	2.41	0.54
1:B:326:ILE:H	1:B:539:VAL:CG1	2.21	0.54
1:C:326:ILE:H	1:C:539:VAL:CG1	2.21	0.54
1:C:1100:THR:HB	2:C:1315:NAG:HN2	1.73	0.54
1:A:752:LEU:HD12	1:A:993:ILE:HG21	1.90	0.54
1:C:560:LEU:O	1:C:562:PHE:N	2.41	0.53
1:C:975:SER:O	1:C:975:SER:OG	2.25	0.53
1:C:1002:GLN:NE2	1:B:759:PHE:HZ	2.05	0.53
1:A:57:PRO:HG3	1:A:273:ARG:HD2	1.90	0.53
1:A:759:PHE:CE2	1:B:1002:GLN:CG	2.90	0.53
1:B:559:PHE:HB2	1:B:584:ILE:CD1	2.35	0.53
1:C:475:ALA:HB3	1:C:487:ASN:HB3	1.90	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:1002:GLN:HE21	1:B:759:PHE:HZ	1.55	0.53
1:A:117:LEU:HD12	1:A:118:LEU:N	2.24	0.53
1:A:429:PHE:HE1	1:A:514:SER:HB2	1.74	0.53
1:A:826:VAL:HB	1:A:1057:PRO:HG2	1.90	0.53
1:B:200:TYR:HA	1:B:230:PRO:HA	1.91	0.53
1:B:560:LEU:O	1:B:562:PHE:N	2.41	0.53
1:B:720:ILE:HD12	1:B:923:ILE:HD11	1.90	0.53
1:C:57:PRO:HG3	1:C:273:ARG:HD2	1.90	0.53
1:C:375:PHE:CG	1:C:508:TYR:CZ	2.97	0.53
1:C:880:GLY:O	1:C:884:SER:OG	2.23	0.53
1:A:62:VAL:CG1	1:A:216:PHE:HE2	2.15	0.53
1:B:752:LEU:HD12	1:B:993:ILE:HG21	1.90	0.53
1:C:403:LYS:HG2	1:C:505:HIS:HA	1.90	0.53
1:A:129:LYS:HD3	1:A:133:PHE:CZ	2.43	0.53
1:A:965:GLN:O	1:A:968:SER:OG	2.22	0.53
1:A:975:SER:O	1:A:975:SER:OG	2.25	0.53
1:B:129:LYS:HA	1:B:168:PHE:O	2.09	0.53
1:B:439:ASN:O	1:B:443:SER:OG	2.25	0.53
1:B:945:LEU:HD12	1:B:948:LEU:HD12	1.90	0.53
1:C:957:GLN:OE1	1:B:765:ARG:HD3	2.08	0.53
1:B:178:ASP:OD1	1:B:178:ASP:N	2.39	0.53
1:C:765:ARG:HD3	1:A:957:GLN:OE1	2.08	0.53
1:B:847:ARG:HB2	1:B:851:CYS:CB	2.39	0.53
1:C:945:LEU:HD12	1:C:948:LEU:HD12	1.90	0.53
1:B:57:PRO:HG3	1:B:273:ARG:HD2	1.90	0.53
1:B:375:PHE:CG	1:B:508:TYR:CZ	2.97	0.53
1:C:858:LEU:HD12	1:C:963:VAL:HG12	1.91	0.53
1:C:965:GLN:O	1:C:968:SER:OG	2.22	0.53
1:A:421:TYR:CD1	1:A:457:ARG:HB3	2.44	0.53
1:A:720:ILE:HD12	1:A:923:ILE:HD11	1.90	0.53
1:B:880:GLY:O	1:B:884:SER:OG	2.23	0.53
1:C:752:LEU:HD12	1:C:993:ILE:HG21	1.90	0.52
1:B:403:LYS:HD2	1:B:505:HIS:HA	1.90	0.52
1:A:858:LEU:HD12	1:A:963:VAL:HG12	1.91	0.52
1:B:420:ASP:HB3	1:B:460:LYS:HD2	1.91	0.52
1:B:1083:HIS:HB2	1:B:1137:VAL:HG13	1.91	0.52
1:C:993:ILE:O	1:C:997:ILE:HG12	2.10	0.52
1:B:752:LEU:HD12	1:B:993:ILE:CG2	2.40	0.52
1:B:858:LEU:HD12	1:B:963:VAL:HG12	1.91	0.52
1:B:993:ILE:O	1:B:997:ILE:HG12	2.10	0.52
1:C:133:PHE:CD2	1:C:160:TYR:HA	2.45	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:191:GLU:HB2	1:C:223:LEU:HD11	1.91	0.52
1:C:418:ILE:HA	1:C:422:ASN:HB2	1.91	0.52
1:A:945:LEU:HD12	1:A:948:LEU:HD12	1.91	0.52
1:B:37:TYR:HB3	1:B:223:LEU:HB2	1.92	0.52
1:C:803:SER:HB3	2:C:1313:NAG:HN2	1.74	0.52
1:A:375:PHE:CG	1:A:508:TYR:CZ	2.97	0.52
1:A:475:ALA:HB3	1:A:487:ASN:HB3	1.90	0.52
1:B:108:THR:C	1:B:110:LEU:H	2.13	0.52
1:B:912:THR:O	1:B:915:VAL:HG12	2.10	0.52
1:B:559:PHE:CB	1:B:584:ILE:HD11	2.36	0.52
1:B:397:ALA:HA	1:B:512:VAL:O	2.09	0.52
1:C:117:LEU:HD12	1:C:118:LEU:N	2.24	0.52
1:C:755:GLN:OE1	1:A:971:GLY:CA	2.41	0.52
1:A:755:GLN:OE1	1:B:971:GLY:CA	2.42	0.52
1:A:752:LEU:HD12	1:A:993:ILE:CG2	2.40	0.52
1:C:1083:HIS:HB2	1:C:1137:VAL:HG13	1.91	0.51
1:A:108:THR:C	1:A:110:LEU:H	2.13	0.51
1:B:229:LEU:H	1:B:229:LEU:HD23	1.75	0.51
1:B:364:ASP:OD1	1:B:364:ASP:N	2.43	0.51
1:C:1076:THR:HB	1:C:1097:SER:HB3	1.92	0.51
1:A:115:GLN:HE21	1:A:233:ILE:HB	1.76	0.51
1:A:993:ILE:O	1:A:997:ILE:HG12	2.10	0.51
1:C:847:ARG:HB2	1:C:851:CYS:CB	2.41	0.51
1:A:329:PHE:HB3	1:A:330:PRO:CD	2.34	0.51
1:A:1083:HIS:HB2	1:A:1137:VAL:HG13	1.91	0.51
1:B:347:PHE:HD2	1:B:399:SER:HB2	1.75	0.51
1:C:752:LEU:HD12	1:C:993:ILE:CG2	2.40	0.51
1:C:912:THR:O	1:C:915:VAL:HG12	2.11	0.51
1:B:931:ILE:O	1:B:934:ILE:HG22	2.09	0.51
1:A:307:THR:HA	1:A:602:THR:HG21	1.93	0.51
1:B:322:PRO:CG	1:B:540:ASN:ND2	2.74	0.51
1:C:364:ASP:N	1:C:364:ASP:OD1	2.43	0.51
1:C:854:LYS:HE2	1:A:592:PHE:CD2	2.46	0.51
1:C:1006:THR:HG21	1:B:762:GLN:OE1	2.10	0.51
1:B:631:PRO:HB3	1:B:633:TRP:CZ2	2.45	0.51
1:B:742:ILE:O	1:B:1000:ARG:NH1	2.43	0.51
1:B:805:ILE:HB	1:B:878:LEU:HD21	1.93	0.51
1:A:31:SER:HB3	1:A:62:VAL:CG2	2.41	0.50
1:B:559:PHE:HD2	1:B:577:ARG:HD2	1.77	0.50
1:C:631:PRO:HB3	1:C:633:TRP:CZ2	2.46	0.50
1:C:759:PHE:CE2	1:A:1002:GLN:CG	2.90	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:836:GLN:O	1:C:837:TYR:C	2.50	0.50
1:B:382:VAL:CG2	1:B:517:LEU:HD11	2.41	0.50
1:B:557:LYS:HD3	1:B:559:PHE:CE1	2.34	0.50
1:C:276:LEU:CD1	1:C:304:LYS:HA	2.42	0.50
1:C:854:LYS:HE2	1:A:592:PHE:HD2	1.75	0.50
1:A:387:LEU:HD11	1:A:515:PHE:CE2	2.47	0.50
1:C:563:GLN:OE1	1:B:43:PHE:CA	2.60	0.50
1:C:675:GLN:HG3	1:C:693:ILE:HD11	1.94	0.50
1:A:177:MET:H	1:A:207:HIS:CE1	2.30	0.50
1:A:765:ARG:HD3	1:B:957:GLN:OE1	2.11	0.50
1:B:189:LEU:HG	1:B:208:THR:O	2.12	0.50
1:B:27:SER:O	1:B:64:TRP:N	2.45	0.50
1:B:581:THR:C	1:B:583:GLU:H	2.14	0.50
1:A:290:ASP:O	1:A:297:SER:HB3	2.12	0.50
1:C:187:LYS:O	1:C:188:ASN:C	2.50	0.50
1:C:403:LYS:HB3	1:C:406:GLU:OE1	2.12	0.50
1:B:113:LYS:HD2	1:B:113:LYS:O	2.12	0.50
1:B:317:ASN:HB2	1:B:592:PHE:CE1	2.46	0.50
1:C:31:SER:HB3	1:C:62:VAL:CG2	2.41	0.50
1:C:762:GLN:OE1	1:A:1006:THR:HG21	2.12	0.50
1:A:382:VAL:CG2	1:A:517:LEU:HD11	2.41	0.50
1:A:905:ARG:HD2	1:A:1049:LEU:O	2.12	0.50
1:B:215:ASP:HB2	1:B:266:TYR:OH	2.12	0.50
1:C:503:VAL:CB	1:A:505:HIS:NE2	2.75	0.49
1:C:905:ARG:HD2	1:C:1049:LEU:O	2.12	0.49
1:A:364:ASP:OD1	1:A:364:ASP:N	2.43	0.49
1:A:762:GLN:OE1	1:B:1006:THR:HG21	2.12	0.49
1:C:177:MET:H	1:C:207:HIS:CE1	2.30	0.49
1:C:215:ASP:HB2	1:C:266:TYR:OH	2.12	0.49
1:C:290:ASP:O	1:C:297:SER:HB3	2.11	0.49
1:A:360:ASN:H	1:A:523:THR:HB	1.78	0.49
1:B:675:GLN:HG3	1:B:693:ILE:HD11	1.94	0.49
1:C:113:LYS:HD2	1:C:113:LYS:O	2.12	0.49
1:A:276:LEU:CD1	1:A:304:LYS:HA	2.42	0.49
1:A:322:PRO:CG	1:A:540:ASN:ND2	2.74	0.49
1:C:946:GLY:O	1:C:950:ASP:HB2	2.13	0.49
1:A:44:ARG:HB3	1:A:47:VAL:CG1	2.41	0.49
1:B:384:PRO:HA	1:B:387:LEU:HB2	1.94	0.49
1:B:821:LEU:HD11	1:B:935:GLN:HG3	1.94	0.49
1:C:570:VAL:HG23	1:C:572:THR:HG23	1.94	0.49
1:A:113:LYS:HD2	1:A:113:LYS:O	2.12	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:631:PRO:HB3	1:A:633:TRP:CZ2	2.47	0.49
1:A:844:ILE:O	1:B:557:LYS:HG3	2.12	0.49
1:B:131:CYS:SG	1:B:163:ALA:O	2.71	0.49
1:B:946:GLY:O	1:B:950:ASP:HB2	2.13	0.49
1:C:108:THR:C	1:C:110:LEU:H	2.13	0.49
1:C:131:CYS:HB3	1:C:133:PHE:CE2	2.47	0.49
1:A:41:LYS:O	1:B:563:GLN:HA	2.12	0.49
1:A:749:CYS:SG	1:A:997:ILE:HD11	2.53	0.49
1:C:189:LEU:HG	1:C:208:THR:O	2.12	0.49
1:A:191:GLU:HB2	1:A:223:LEU:HD11	1.93	0.49
1:A:347:PHE:CE1	1:A:509:ARG:HD3	2.48	0.49
1:A:412:PRO:HG3	1:A:429:PHE:HB3	1.93	0.49
1:C:360:ASN:H	1:C:523:THR:HB	1.77	0.49
1:A:131:CYS:HB3	1:A:133:PHE:CE2	2.48	0.49
1:A:946:GLY:O	1:A:950:ASP:HB2	2.13	0.49
1:B:177:MET:H	1:B:207:HIS:CE1	2.30	0.49
1:C:44:ARG:HB3	1:C:47:VAL:CG1	2.41	0.48
1:C:307:THR:HA	1:C:602:THR:HG21	1.95	0.48
1:C:326:ILE:HD13	1:C:533:LEU:C	2.31	0.48
1:C:971:GLY:HA2	1:B:755:GLN:CD	2.31	0.48
1:A:497:PHE:HA	1:A:501:TYR:HE2	1.78	0.48
1:A:675:GLN:HG3	1:A:693:ILE:HD11	1.94	0.48
1:B:347:PHE:CE1	1:B:509:ARG:HD3	2.48	0.48
1:B:360:ASN:H	1:B:523:THR:HB	1.77	0.48
1:B:588:THR:HG23	1:B:589:PRO:HD2	1.95	0.48
1:C:578:ASP:O	1:C:582:LEU:N	2.45	0.48
1:C:749:CYS:SG	1:C:997:ILE:HD11	2.53	0.48
1:A:740:MET:HG3	1:B:592:PHE:CZ	2.48	0.48
1:A:973:ILE:HG22	1:A:992:GLN:HG3	1.95	0.48
1:B:556:ASN:O	1:B:557:LYS:C	2.51	0.48
1:B:927:PHE:HZ	1:B:1052:PHE:HE2	1.60	0.48
1:C:568:ASP:HA	1:B:846:ALA:HB1	1.95	0.48
1:C:588:THR:HG22	1:C:589:PRO:O	2.13	0.48
1:C:588:THR:OG1	1:B:841:LEU:HB3	2.13	0.48
1:A:296:LEU:HD11	1:A:308:VAL:HG21	1.95	0.48
1:B:126:VAL:HG11	1:B:175:PHE:CE1	2.49	0.48
1:B:214:ARG:O	1:B:217:PRO:HG3	2.13	0.48
1:B:555:SER:HB3	1:B:584:ILE:HG22	1.95	0.48
1:C:760:CYS:HA	1:C:763:LEU:HG	1.96	0.48
1:A:215:ASP:HB2	1:A:266:TYR:OH	2.12	0.48
1:A:374:PHE:CZ	1:A:434:ILE:HG23	2.48	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:927:PHE:HZ	1:A:1052:PHE:HE2	1.61	0.48
1:A:1106:GLN:OE1	1:A:1106:GLN:N	2.47	0.48
1:B:497:PHE:HA	1:B:501:TYR:HE2	1.78	0.48
1:C:214:ARG:O	1:C:217:PRO:HG3	2.13	0.48
1:B:760:CYS:HA	1:B:763:LEU:HG	1.95	0.48
1:B:905:ARG:HD2	1:B:1049:LEU:O	2.12	0.48
1:A:103:GLY:HA3	1:A:120:VAL:HA	1.95	0.48
1:A:106:PHE:CD1	1:A:235:ILE:HG21	2.49	0.48
1:A:802:PHE:O	1:A:804:GLN:N	2.47	0.48
1:C:431:GLY:HA2	1:C:515:PHE:HD2	1.77	0.48
1:B:44:ARG:HB3	1:B:47:VAL:CG1	2.41	0.48
1:B:106:PHE:CD1	1:B:235:ILE:HG21	2.49	0.48
1:B:191:GLU:HB2	1:B:223:LEU:HD11	1.95	0.48
1:C:126:VAL:HG11	1:C:175:PHE:CE1	2.49	0.48
1:A:331:ASN:HB3	1:A:580:GLN:HG2	1.94	0.48
1:B:322:PRO:CG	1:B:540:ASN:HD21	2.16	0.48
1:C:131:CYS:HA	1:C:166:CYS:HA	1.96	0.48
1:A:126:VAL:HG11	1:A:175:PHE:CE1	2.49	0.48
1:B:749:CYS:SG	1:B:997:ILE:HD11	2.53	0.48
1:B:973:ILE:HG22	1:B:992:GLN:HG3	1.95	0.48
1:C:81:ASN:ND2	1:C:240:THR:O	2.25	0.48
1:C:296:LEU:HD11	1:C:308:VAL:HG21	1.95	0.48
1:C:497:PHE:HA	1:C:501:TYR:HE2	1.78	0.48
1:C:843:ASP:O	1:C:845:ALA:N	2.47	0.48
1:C:439:ASN:O	1:C:443:SER:OG	2.25	0.47
1:B:878:LEU:HD13	1:B:1053:PRO:HD2	1.96	0.47
1:C:31:SER:HB3	1:C:62:VAL:HG21	1.96	0.47
1:C:347:PHE:CE1	1:C:509:ARG:HD3	2.48	0.47
1:A:439:ASN:O	1:A:443:SER:OG	2.25	0.47
1:C:106:PHE:HB3	1:C:235:ILE:HG23	1.97	0.47
1:C:557:LYS:HB3	1:C:559:PHE:HD1	1.79	0.47
1:C:973:ILE:HG22	1:C:992:GLN:HG3	1.95	0.47
1:A:760:CYS:HA	1:A:763:LEU:HG	1.96	0.47
1:B:213:GLY:C	1:B:214:ARG:HG3	2.35	0.47
1:B:726:ILE:HG23	1:B:1061:VAL:HG22	1.96	0.47
1:C:103:GLY:HA3	1:C:120:VAL:HA	1.96	0.47
1:C:927:PHE:HZ	1:C:1052:PHE:HE2	1.60	0.47
1:C:1002:GLN:CD	1:B:759:PHE:HZ	2.15	0.47
1:A:520:ALA:O	1:A:521:PRO:C	2.53	0.47
1:A:726:ILE:HG23	1:A:1061:VAL:HG22	1.96	0.47
1:B:342:PHE:CZ	1:B:511:VAL:HG21	2.49	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:84:LEU:HB2	1:C:238:PHE:HD2	1.79	0.47
1:C:329:PHE:HB3	1:C:330:PRO:HD2	1.93	0.47
1:A:1101:HIS:CD2	2:A:1315:NAG:H3	2.49	0.47
1:B:84:LEU:HB2	1:B:238:PHE:HD2	1.79	0.47
1:B:383:SER:HB3	1:B:386:LYS:HG2	1.95	0.47
1:C:322:PRO:CG	1:C:540:ASN:HD21	2.16	0.47
1:C:726:ILE:HG23	1:C:1061:VAL:HG22	1.96	0.47
1:C:850:ILE:O	1:C:854:LYS:HG2	2.15	0.47
1:C:931:ILE:O	1:C:934:ILE:HG22	2.15	0.47
1:A:350:VAL:HG22	1:A:422:ASN:HB3	1.96	0.47
1:C:106:PHE:CD1	1:C:235:ILE:HG21	2.49	0.47
1:C:356:THR:OG1	1:C:397:ALA:HB3	2.15	0.47
1:A:213:GLY:C	1:A:214:ARG:HG3	2.34	0.47
1:A:931:ILE:O	1:A:934:ILE:HG22	2.15	0.47
1:B:117:LEU:HD12	1:B:118:LEU:N	2.30	0.47
1:B:206:LYS:HB3	1:B:223:LEU:HD13	1.97	0.47
1:B:216:PHE:O	1:B:217:PRO:C	2.52	0.47
1:B:1132:ILE:HD12	1:B:1132:ILE:HA	1.78	0.47
1:C:823:PHE:CD1	1:C:1057:PRO:HG3	2.50	0.47
1:A:106:PHE:HB3	1:A:235:ILE:HG23	1.97	0.47
1:A:214:ARG:O	1:A:217:PRO:HG3	2.13	0.47
1:A:906:PHE:CD2	1:A:916:LEU:HB2	2.50	0.47
1:C:177:MET:HB2	1:C:207:HIS:ND1	2.30	0.47
1:C:322:PRO:CG	1:C:540:ASN:ND2	2.74	0.47
1:C:577:ARG:HG2	1:C:584:ILE:HD13	1.97	0.47
1:C:631:PRO:HA	1:C:633:TRP:CZ3	2.50	0.47
1:C:741:TYR:CD2	1:C:1004:LEU:HD22	2.50	0.47
1:A:31:SER:HB3	1:A:62:VAL:HG21	1.96	0.47
1:A:627:ASP:HA	1:A:634:ARG:HH22	1.80	0.47
1:A:823:PHE:CD1	1:A:1057:PRO:HG3	2.50	0.47
1:B:823:PHE:CD1	1:B:1057:PRO:HG3	2.50	0.47
1:A:878:LEU:HD13	1:A:1053:PRO:HD2	1.96	0.46
1:C:175:PHE:CD1	1:C:175:PHE:N	2.82	0.46
1:C:355:ARG:NE	1:C:398:ASP:OD2	2.48	0.46
1:C:742:ILE:HG22	1:C:997:ILE:CD1	2.45	0.46
1:C:983:ARG:HD3	1:A:517:LEU:CD1	2.30	0.46
1:C:1132:ILE:HA	1:C:1132:ILE:HD12	1.77	0.46
1:A:216:PHE:O	1:A:217:PRO:C	2.52	0.46
1:B:204:TYR:CE2	1:B:225:PRO:HG3	2.50	0.46
1:B:350:VAL:HG22	1:B:422:ASN:HB3	1.97	0.46
1:C:25:THR:HG23	1:C:66:HIS:HB2	1.98	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:878:LEU:HD13	1:C:1053:PRO:HD2	1.96	0.46
1:A:84:LEU:HB2	1:A:238:PHE:HD2	1.79	0.46
1:A:318:PHE:HD2	1:A:629:LEU:HD11	1.81	0.46
1:B:103:GLY:HA3	1:B:120:VAL:HA	1.96	0.46
1:B:559:PHE:CD1	1:B:584:ILE:HD13	2.50	0.46
1:B:718:PHE:HE1	1:B:919:ASN:ND2	2.14	0.46
1:C:755:GLN:CD	1:A:971:GLY:HA2	2.30	0.46
1:A:718:PHE:HE1	1:A:919:ASN:ND2	2.14	0.46
1:B:177:MET:HB2	1:B:207:HIS:ND1	2.31	0.46
1:C:176:LEU:HD22	1:C:190:ARG:HD2	1.98	0.46
1:C:645:THR:HG23	1:C:647:ALA:N	2.31	0.46
1:C:650:LEU:HD23	1:C:653:ALA:HB3	1.98	0.46
1:B:129:LYS:HE2	1:B:169:GLU:HG3	1.98	0.46
1:B:307:THR:HA	1:B:602:THR:HG21	1.96	0.46
1:C:563:GLN:HA	1:B:41:LYS:O	2.16	0.46
1:B:25:THR:HG23	1:B:66:HIS:HB2	1.98	0.46
1:B:454:ARG:HH22	1:B:467:ASP:HB3	1.81	0.46
1:A:133:PHE:CD2	1:A:160:TYR:HA	2.51	0.46
1:B:118:LEU:HD23	1:B:118:LEU:HA	1.81	0.46
1:C:1083:HIS:CE1	1:C:1137:VAL:CG2	2.96	0.46
1:A:175:PHE:CD1	1:A:175:PHE:N	2.82	0.46
1:A:347:PHE:HD2	1:A:399:SER:HB2	1.81	0.46
1:B:627:ASP:HA	1:B:634:ARG:HH22	1.80	0.46
1:B:1092:GLU:N	1:B:1092:GLU:OE2	2.49	0.46
1:C:592:PHE:CD1	1:B:740:MET:HE2	2.51	0.46
1:C:763:LEU:HD13	1:C:1004:LEU:HG	1.98	0.46
1:A:342:PHE:CE2	1:A:436:TRP:CZ3	3.04	0.46
1:C:454:ARG:HH22	1:C:467:ASP:HB3	1.81	0.46
1:C:718:PHE:HE1	1:C:919:ASN:ND2	2.14	0.46
1:A:25:THR:HG23	1:A:66:HIS:HB2	1.98	0.46
1:A:177:MET:HB2	1:A:207:HIS:ND1	2.31	0.46
1:A:439:ASN:OD1	1:A:507:PRO:HD2	2.17	0.46
1:A:631:PRO:HA	1:A:633:TRP:CZ3	2.50	0.46
1:B:575:ALA:HA	1:B:585:LEU:O	2.16	0.46
1:C:423:TYR:OH	1:C:464:PHE:HE1	1.98	0.45
1:A:454:ARG:HH22	1:A:467:ASP:HB3	1.81	0.45
1:B:528:LYS:O	1:B:529:LYS:HB3	2.16	0.45
1:C:105:ILE:HD13	1:C:159:VAL:HG11	1.98	0.45
1:C:439:ASN:OD1	1:C:507:PRO:HD2	2.17	0.45
1:C:528:LYS:O	1:C:529:LYS:HB3	2.16	0.45
1:C:617:CYS:O	1:C:621:SER:N	2.40	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:759:PHE:CZ	1:B:1002:GLN:NE2	2.84	0.45
1:A:1092:GLU:OE2	1:A:1092:GLU:N	2.49	0.45
1:B:106:PHE:HB3	1:B:235:ILE:HG23	1.97	0.45
1:B:162:SER:O	1:B:163:ALA:C	2.54	0.45
1:B:631:PRO:HA	1:B:633:TRP:CZ3	2.51	0.45
1:B:763:LEU:HD13	1:B:1004:LEU:HG	1.98	0.45
1:B:1101:HIS:CD2	2:B:1315:NAG:H3	2.51	0.45
1:C:644:GLN:NE2	1:C:648:GLY:O	2.49	0.45
1:A:528:LYS:O	1:A:529:LYS:HB3	2.16	0.45
1:A:763:LEU:HD13	1:A:1004:LEU:HG	1.98	0.45
1:B:106:PHE:CE2	1:B:238:PHE:HD1	2.34	0.45
1:B:878:LEU:O	1:B:882:ILE:HG12	2.17	0.45
1:C:164:ASN:HB2	2:C:1302:NAG:HN2	1.81	0.45
1:C:343:ASN:OD1	1:C:343:ASN:N	2.50	0.45
1:A:1101:HIS:CG	2:A:1315:NAG:H5	2.52	0.45
1:B:327:VAL:HG11	1:B:528:LYS:CG	2.47	0.45
1:C:1092:GLU:OE2	1:C:1092:GLU:N	2.49	0.45
1:A:176:LEU:HD22	1:A:190:ARG:HD2	1.98	0.45
1:B:520:ALA:O	1:B:521:PRO:C	2.53	0.45
1:B:705:VAL:HG12	1:B:707:TYR:H	1.82	0.45
1:A:131:CYS:HA	1:A:166:CYS:HA	1.99	0.45
1:A:210:ILE:H	1:A:210:ILE:HG13	1.56	0.45
1:A:501:TYR:HB3	1:A:505:HIS:HB2	1.98	0.45
1:A:742:ILE:HD13	1:A:1001:LEU:HD13	1.99	0.45
1:B:363:ALA:O	1:B:527:PRO:HD3	2.17	0.45
1:B:878:LEU:HD12	1:B:878:LEU:HA	1.75	0.45
1:C:505:HIS:CE1	1:B:503:VAL:HB	2.52	0.45
1:C:520:ALA:O	1:C:521:PRO:C	2.53	0.45
1:C:742:ILE:HG22	1:C:997:ILE:HD12	1.99	0.45
1:A:303:LEU:H	1:A:303:LEU:HG	1.67	0.45
1:B:97:LYS:HE2	1:B:184:GLY:HA3	1.99	0.45
1:B:342:PHE:CE2	1:B:436:TRP:CZ3	3.04	0.45
1:A:188:ASN:OD1	1:A:188:ASN:N	2.50	0.45
1:A:343:ASN:N	1:A:343:ASN:OD1	2.50	0.45
1:A:390:LEU:HD13	1:A:390:LEU:HA	1.83	0.45
1:A:503:VAL:HB	1:B:505:HIS:NE2	2.31	0.45
1:B:343:ASN:OD1	1:B:343:ASN:N	2.50	0.45
1:C:41:LYS:HB3	1:A:562:PHE:O	2.17	0.45
1:C:97:LYS:HE2	1:C:184:GLY:HA3	1.98	0.45
1:C:125:ASN:HB2	2:C:1301:NAG:H62	1.99	0.45
1:C:321:GLN:NE2	1:C:630:THR:OG1	2.49	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:501:TYR:HB3	1:C:505:HIS:HB2	1.98	0.45
1:C:741:TYR:CE2	1:C:1004:LEU:HB2	2.51	0.45
1:C:878:LEU:O	1:C:882:ILE:HG12	2.17	0.45
1:A:129:LYS:HD3	1:A:133:PHE:HZ	1.82	0.45
1:A:327:VAL:HG11	1:A:528:LYS:CG	2.47	0.45
1:A:705:VAL:HG12	1:A:707:TYR:H	1.82	0.45
1:A:744:GLY:O	1:A:746:SER:N	2.50	0.45
1:A:759:PHE:HZ	1:B:1002:GLN:NE2	2.15	0.45
1:C:106:PHE:CE2	1:C:238:PHE:HD1	2.34	0.45
1:C:278:LYS:HB2	1:C:306:PHE:CE1	2.52	0.45
1:C:363:ALA:O	1:C:527:PRO:HD3	2.17	0.45
1:A:106:PHE:CE2	1:A:238:PHE:HD1	2.34	0.45
1:A:363:ALA:O	1:A:527:PRO:HD3	2.17	0.45
1:B:175:PHE:CD1	1:B:175:PHE:N	2.82	0.45
1:C:342:PHE:CE2	1:C:436:TRP:CZ3	3.04	0.44
1:C:1013:ILE:CD1	1:B:1012:LEU:HD13	2.47	0.44
1:B:176:LEU:HD22	1:B:190:ARG:HD2	1.98	0.44
1:C:907:ASN:HB2	1:C:913:GLN:HG2	1.99	0.44
1:B:276:LEU:HD22	1:B:301:CYS:HA	1.99	0.44
1:C:44:ARG:O	1:C:283:GLY:HA2	2.18	0.44
1:C:216:PHE:O	1:C:217:PRO:C	2.52	0.44
1:C:326:ILE:HG12	1:C:532:ASN:O	2.18	0.44
1:A:321:GLN:NE2	1:A:630:THR:OG1	2.49	0.44
1:B:501:TYR:HB3	1:B:505:HIS:HB2	1.98	0.44
1:C:327:VAL:HG11	1:C:528:LYS:CG	2.47	0.44
1:C:780:GLU:O	1:C:784:GLN:NE2	2.49	0.44
1:C:858:LEU:HD13	1:C:962:LEU:HD13	2.00	0.44
1:A:348:ALA:HB1	1:A:352:ALA:O	2.18	0.44
1:B:188:ASN:N	1:B:188:ASN:OD1	2.50	0.44
1:B:450:ASP:OD1	1:B:450:ASP:N	2.50	0.44
1:C:244:LEU:HD23	1:C:244:LEU:HA	1.87	0.44
1:C:567:ARG:HB3	1:C:568:ASP:H	1.67	0.44
1:A:278:LYS:HB2	1:A:306:PHE:CE1	2.52	0.44
1:A:309:GLU:HG2	1:A:313:TYR:OH	2.18	0.44
1:B:34:ARG:NH2	1:B:217:PRO:O	2.51	0.44
1:A:97:LYS:HE2	1:A:184:GLY:HA3	1.98	0.44
1:A:402:ILE:HD11	1:A:510:VAL:HG21	2.00	0.44
1:C:375:PHE:CG	1:C:508:TYR:OH	2.68	0.44
1:C:1002:GLN:HG3	1:B:759:PHE:CE2	2.44	0.44
1:A:125:ASN:HB2	2:A:1301:NAG:H62	1.99	0.44
1:A:742:ILE:HG22	1:A:997:ILE:CD1	2.47	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:930:ALA:HA	1:A:933:LYS:HG2	2.00	0.44
1:B:125:ASN:HB2	2:B:1301:NAG:H62	1.99	0.44
1:B:439:ASN:OD1	1:B:507:PRO:HD2	2.17	0.44
1:B:1101:HIS:CG	2:B:1315:NAG:H5	2.53	0.44
1:C:930:ALA:HA	1:C:933:LYS:HG2	2.00	0.44
1:A:878:LEU:O	1:A:882:ILE:HG12	2.17	0.44
1:B:348:ALA:HB1	1:B:352:ALA:O	2.18	0.44
1:C:348:ALA:HB1	1:C:352:ALA:O	2.18	0.44
1:B:195:LYS:HE2	1:B:195:LYS:HB2	1.79	0.44
1:B:358:ILE:HB	1:B:395:VAL:HB	2.00	0.44
1:B:930:ALA:HA	1:B:933:LYS:HG2	2.00	0.44
1:C:322:PRO:CB	1:C:540:ASN:ND2	2.81	0.43
1:C:339:HIS:O	1:C:340:GLU:C	2.53	0.43
1:C:450:ASP:N	1:C:450:ASP:OD1	2.51	0.43
1:C:562:PHE:O	1:B:41:LYS:HD3	2.17	0.43
1:C:705:VAL:C	1:C:707:TYR:H	2.21	0.43
1:A:44:ARG:O	1:A:283:GLY:HA2	2.18	0.43
1:A:581:THR:O	1:A:583:GLU:N	2.50	0.43
1:A:792:PRO:HG3	1:B:707:TYR:CD1	2.50	0.43
1:B:419:ALA:HA	1:B:423:TYR:O	2.18	0.43
1:C:34:ARG:NH2	1:C:217:PRO:O	2.51	0.43
1:C:1001:LEU:HD12	1:C:1001:LEU:HA	1.77	0.43
1:C:1078:ALA:C	1:B:900:MET:HE1	2.39	0.43
1:A:806:LEU:HD23	1:A:878:LEU:HD23	1.99	0.43
1:B:339:HIS:O	1:B:340:GLU:C	2.53	0.43
1:A:413:GLY:HA2	1:A:424:LYS:HD2	1.98	0.43
1:A:857:GLY:O	1:A:858:LEU:HD23	2.18	0.43
3:B:1317:IDU:O1S	3:B:1317:IDU:O3	2.22	0.43
1:A:454:ARG:HH12	1:A:467:ASP:HB3	1.84	0.43
1:C:401:VAL:HG21	1:C:451:TYR:CE2	2.54	0.43
1:A:554:LYS:HZ2	1:A:554:LYS:HA	1.84	0.43
1:B:322:PRO:CB	1:B:540:ASN:ND2	2.81	0.43
1:B:358:ILE:HG22	1:B:524:VAL:HG21	2.00	0.43
1:C:309:GLU:HG2	1:C:313:TYR:OH	2.18	0.43
1:C:742:ILE:HD13	1:C:1001:LEU:HD13	2.00	0.43
1:C:744:GLY:O	1:C:745:ASP:C	2.57	0.43
1:A:108:THR:O	1:A:110:LEU:N	2.50	0.43
1:A:212:ILE:HG13	1:A:212:ILE:O	2.18	0.43
1:A:339:HIS:O	1:A:340:GLU:C	2.53	0.43
1:A:858:LEU:HD13	1:A:962:LEU:HD13	2.00	0.43
1:A:947:LYS:HE3	1:A:947:LYS:HB2	1.83	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:358:ILE:HG22	1:C:524:VAL:HG21	2.00	0.43
1:C:557:LYS:CD	1:C:559:PHE:HE1	2.32	0.43
1:A:908:GLY:HA3	1:A:1036:GLN:HE22	1.84	0.43
1:A:1072:GLU:OE1	1:A:1072:GLU:N	2.51	0.43
1:B:278:LYS:HB2	1:B:306:PHE:CE1	2.52	0.43
1:B:789:TYR:CE2	1:B:888:PHE:HD2	2.36	0.43
1:C:34:ARG:NH2	1:C:219:GLY:O	2.52	0.43
1:C:382:VAL:HG22	1:C:517:LEU:HD11	2.01	0.43
1:A:164:ASN:O	1:A:166:CYS:N	2.52	0.43
1:B:418:ILE:O	1:B:422:ASN:HB2	2.19	0.43
1:B:454:ARG:HH12	1:B:467:ASP:HB3	1.84	0.43
1:C:118:LEU:HD11	1:C:159:VAL:HB	2.00	0.43
2:C:1311:NAG:H62	1:B:796:TYR:CG	2.54	0.43
1:A:744:GLY:O	1:A:745:ASP:C	2.57	0.43
1:A:841:LEU:HB3	1:B:588:THR:OG1	2.19	0.43
1:A:1083:HIS:CE1	1:A:1137:VAL:CG2	2.96	0.43
1:B:44:ARG:O	1:B:283:GLY:HA2	2.18	0.43
1:B:455:SER:OG	1:B:456:PHE:CD1	2.71	0.43
1:B:908:GLY:HA3	1:B:1036:GLN:HE22	1.84	0.43
1:C:1029:MET:O	1:C:1033:VAL:HB	2.19	0.43
1:A:322:PRO:CB	1:A:540:ASN:ND2	2.81	0.43
1:A:742:ILE:HG22	1:A:997:ILE:HD12	1.99	0.43
1:C:134:GLN:HE21	1:C:135:PHE:H	1.67	0.42
1:A:34:ARG:NH2	1:A:217:PRO:O	2.51	0.42
1:A:34:ARG:NH2	1:A:219:GLY:O	2.52	0.42
1:A:320:VAL:HG22	1:A:629:LEU:HD12	2.01	0.42
1:A:340:GLU:O	1:A:342:PHE:N	2.52	0.42
1:B:303:LEU:H	1:B:303:LEU:HG	1.73	0.42
1:B:375:PHE:CG	1:B:508:TYR:OH	2.68	0.42
1:B:388:ASN:HB3	1:B:527:PRO:HD2	2.00	0.42
1:C:327:VAL:HG13	1:C:542:ASN:HB3	2.01	0.42
1:C:434:ILE:HB	1:C:511:VAL:HG22	2.01	0.42
1:C:744:GLY:O	1:C:746:SER:N	2.52	0.42
1:A:130:VAL:HG23	1:A:168:PHE:HB3	2.00	0.42
1:A:503:VAL:CB	1:B:505:HIS:NE2	2.82	0.42
1:A:847:ARG:HB2	1:A:851:CYS:HB3	2.00	0.42
1:B:299:THR:O	1:B:302:THR:HG22	2.18	0.42
1:B:309:GLU:HG2	1:B:313:TYR:OH	2.19	0.42
1:B:340:GLU:O	1:B:342:PHE:N	2.52	0.42
1:C:62:VAL:HG13	1:C:267:VAL:O	2.20	0.42
1:C:759:PHE:CZ	1:A:1002:GLN:NE2	2.86	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:908:GLY:HA3	1:C:1036:GLN:HE22	1.84	0.42
1:A:99:ASN:HD21	1:A:102:ARG:HH11	1.68	0.42
1:A:423:TYR:OH	1:A:512:VAL:HG11	2.19	0.42
1:A:780:GLU:O	1:A:784:GLN:NE2	2.49	0.42
1:A:984:LEU:HB3	1:A:989:ALA:HB2	2.02	0.42
1:B:34:ARG:NH2	1:B:219:GLY:O	2.52	0.42
1:B:387:LEU:HD11	1:B:515:PHE:CE2	2.55	0.42
1:B:1029:MET:O	1:B:1033:VAL:HB	2.19	0.42
1:C:454:ARG:HH12	1:C:467:ASP:HB3	1.84	0.42
1:A:847:ARG:HB2	1:A:851:CYS:HB2	2.00	0.42
1:A:878:LEU:HA	1:A:878:LEU:HD12	1.75	0.42
1:B:858:LEU:HD13	1:B:962:LEU:HD13	2.00	0.42
1:C:99:ASN:HD21	1:C:102:ARG:HH11	1.68	0.42
1:C:404:GLY:HA2	1:C:508:TYR:CD2	2.53	0.42
1:A:48:LEU:HD23	1:A:48:LEU:HA	1.73	0.42
1:A:326:ILE:CD1	1:A:532:ASN:O	2.59	0.42
1:A:1114:ILE:HD13	1:A:1114:ILE:HA	1.93	0.42
1:B:320:VAL:HG22	1:B:629:LEU:HD12	2.02	0.42
1:A:574:ASP:O	1:A:587:ILE:N	2.50	0.42
1:A:983:ARG:HD3	1:B:517:LEU:CD1	2.37	0.42
1:B:364:ASP:O	1:B:367:VAL:HG12	2.20	0.42
1:C:379:CYS:HB3	1:C:382:VAL:O	2.19	0.42
1:C:403:LYS:N	1:C:495:TYR:OH	2.51	0.42
1:A:358:ILE:HB	1:A:395:VAL:HB	2.02	0.42
1:C:1101:HIS:CD2	2:C:1315:NAG:H3	2.54	0.42
1:C:984:LEU:HB3	1:C:989:ALA:HB2	2.02	0.42
1:A:738:CYS:O	1:A:742:ILE:HG13	2.19	0.42
1:A:878:LEU:HD11	1:A:1052:PHE:HB3	2.02	0.42
1:B:327:VAL:HG13	1:B:542:ASN:HB3	2.01	0.42
1:B:375:PHE:CG	1:B:508:TYR:CE1	3.08	0.42
1:B:502:GLY:O	1:B:506:GLN:HG2	2.20	0.42
1:C:97:LYS:O	1:C:97:LYS:NZ	2.52	0.42
1:C:419:ALA:HA	1:C:423:TYR:O	2.19	0.42
1:A:129:LYS:HB3	1:A:169:GLU:HG3	2.01	0.42
1:A:387:LEU:HD11	1:A:515:PHE:CZ	2.55	0.42
1:B:559:PHE:CG	1:B:584:ILE:CD1	3.03	0.42
1:B:984:LEU:HB3	1:B:989:ALA:HB2	2.02	0.42
1:C:187:LYS:H	1:C:210:ILE:CG1	2.33	0.41
1:C:340:GLU:O	1:C:342:PHE:N	2.52	0.41
1:C:347:PHE:CE1	1:C:509:ARG:NH1	2.88	0.41
1:C:527:PRO:O	1:C:528:LYS:HB3	2.20	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:567:ARG:HE	1:B:42:VAL:HG11	1.85	0.41
1:C:616:ASN:HA	1:C:644:GLN:HE22	1.85	0.41
1:C:742:ILE:CD1	1:C:1001:LEU:HD13	2.49	0.41
1:A:62:VAL:HG13	1:A:267:VAL:O	2.20	0.41
1:A:97:LYS:O	1:A:97:LYS:NZ	2.52	0.41
1:A:130:VAL:CG1	1:A:233:ILE:HD13	2.50	0.41
1:A:318:PHE:CD2	1:A:629:LEU:HD11	2.55	0.41
1:A:375:PHE:CG	1:A:508:TYR:OH	2.68	0.41
1:B:878:LEU:HD11	1:B:1052:PHE:HB3	2.02	0.41
1:C:320:VAL:HG22	1:C:629:LEU:HD12	2.02	0.41
1:C:740:MET:HG2	1:C:857:GLY:HA3	2.01	0.41
1:C:806:LEU:HD21	1:C:882:ILE:HD11	2.02	0.41
1:C:878:LEU:HD11	1:C:1052:PHE:HB3	2.02	0.41
1:C:974:SER:OG	1:C:975:SER:N	2.53	0.41
1:A:1029:MET:O	1:A:1033:VAL:HB	2.19	0.41
1:B:99:ASN:HD21	1:B:102:ARG:HH11	1.68	0.41
1:B:974:SER:OG	1:B:975:SER:N	2.53	0.41
1:C:502:GLY:O	1:C:506:GLN:HG2	2.20	0.41
1:C:703:ASN:HB2	1:B:787:GLN:HB3	2.02	0.41
1:C:1101:HIS:HB2	2:C:1315:NAG:H5	2.02	0.41
1:A:327:VAL:HG13	1:A:542:ASN:HB3	2.01	0.41
1:A:347:PHE:CE1	1:A:509:ARG:NH1	2.88	0.41
1:A:450:ASP:OD1	1:A:450:ASP:N	2.50	0.41
1:A:455:SER:OG	1:A:456:PHE:CD1	2.71	0.41
1:B:108:THR:O	1:B:110:LEU:N	2.50	0.41
1:B:527:PRO:O	1:B:528:LYS:HB3	2.20	0.41
1:B:581:THR:O	1:B:583:GLU:N	2.53	0.41
1:A:527:PRO:O	1:A:528:LYS:HB3	2.20	0.41
1:B:322:PRO:HB2	1:B:540:ASN:ND2	2.36	0.41
1:B:347:PHE:CE1	1:B:509:ARG:NH1	2.88	0.41
1:C:629:LEU:HD23	1:C:631:PRO:HG2	2.03	0.41
1:A:581:THR:C	1:A:583:GLU:N	2.74	0.41
1:B:402:ILE:HD11	1:B:510:VAL:HG21	2.01	0.41
1:B:629:LEU:HD23	1:B:631:PRO:HG2	2.03	0.41
1:C:878:LEU:HA	1:C:878:LEU:HD12	1.75	0.41
1:A:388:ASN:HB3	1:A:527:PRO:HD2	2.02	0.41
1:C:322:PRO:HB2	1:C:540:ASN:ND2	2.36	0.41
1:A:502:GLY:O	1:A:506:GLN:HG2	2.20	0.41
1:A:518:LEU:HD12	1:A:518:LEU:HA	1.83	0.41
1:A:697:MET:H	1:A:697:MET:HG2	1.72	0.41
1:A:974:SER:OG	1:A:975:SER:N	2.53	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1001:LEU:HD12	1:A:1001:LEU:HA	1.77	0.41
1:C:375:PHE:CG	1:C:508:TYR:CE1	3.08	0.41
1:C:588:THR:HG23	1:C:589:PRO:HD2	2.03	0.41
1:C:947:LYS:HE3	1:C:947:LYS:HB2	1.83	0.41
1:A:134:GLN:HG2	1:A:162:SER:HB2	2.02	0.41
1:A:345:THR:OG1	1:A:346:ARG:N	2.54	0.41
1:A:375:PHE:CG	1:A:508:TYR:CE1	3.08	0.41
1:A:1012:LEU:HB3	1:B:1013:ILE:CD1	2.51	0.41
1:B:390:LEU:HA	1:B:390:LEU:HD13	1.87	0.41
1:B:411:ALA:HB3	1:B:414:GLN:CG	2.49	0.41
1:B:780:GLU:O	1:B:784:GLN:NE2	2.49	0.41
1:C:120:VAL:HG13	1:C:127:PHE:HB3	2.02	0.41
1:C:364:ASP:O	1:C:367:VAL:HG12	2.20	0.41
1:C:435:ALA:HB2	1:C:510:VAL:HG22	2.03	0.41
1:C:759:PHE:HZ	1:A:1002:GLN:NE2	2.19	0.41
1:C:795:LYS:HB3	2:C:1313:NAG:H83	2.03	0.41
1:C:1012:LEU:HB3	1:A:1013:ILE:CD1	2.50	0.41
1:C:1072:GLU:N	1:C:1072:GLU:OE1	2.54	0.41
1:A:40:ASP:CG	1:A:41:LYS:H	2.24	0.41
1:A:120:VAL:HG13	1:A:127:PHE:HB3	2.02	0.41
1:A:364:ASP:O	1:A:367:VAL:HG12	2.20	0.41
1:A:383:SER:HB3	1:A:386:LYS:HG2	2.02	0.41
1:A:435:ALA:HB2	1:A:510:VAL:HG22	2.03	0.41
1:A:961:THR:O	1:A:965:GLN:HG2	2.21	0.41
1:B:131:CYS:HB3	1:B:133:PHE:CZ	2.56	0.41
1:B:321:GLN:NE2	1:B:630:THR:OG1	2.49	0.41
1:B:435:ALA:HB2	1:B:510:VAL:HG22	2.03	0.41
1:B:802:PHE:HB3	1:B:805:ILE:HG12	2.02	0.41
1:B:961:THR:O	1:B:965:GLN:HG2	2.21	0.41
1:B:1083:HIS:CE1	1:B:1137:VAL:CG2	2.96	0.41
1:C:535:LYS:O	1:C:536:ASN:CB	2.69	0.41
1:C:714:ILE:HB	1:C:1075:PHE:CE2	2.56	0.41
1:C:759:PHE:HZ	1:A:1002:GLN:CD	2.16	0.41
1:C:961:THR:O	1:C:965:GLN:HG2	2.21	0.41
1:A:365:TYR:CE2	1:A:387:LEU:HG	2.56	0.41
1:A:406:GLU:HA	1:A:409:GLN:HB3	2.03	0.41
1:B:130:VAL:HG21	1:B:231:ILE:HD12	2.03	0.41
1:C:345:THR:OG1	1:C:346:ARG:N	2.54	0.40
1:A:535:LYS:O	1:A:536:ASN:CB	2.69	0.40
1:B:40:ASP:CG	1:B:41:LYS:H	2.24	0.40
1:B:743:CYS:HB3	1:B:749:CYS:HB3	1.82	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:1079:PRO:HD2	1:C:1131:GLY:O	2.22	0.40
1:A:358:ILE:HG22	1:A:524:VAL:HG21	2.02	0.40
1:A:857:GLY:C	1:A:858:LEU:HD23	2.42	0.40
1:A:913:GLN:H	1:A:913:GLN:HG3	1.74	0.40
1:B:345:THR:OG1	1:B:346:ARG:N	2.54	0.40
1:B:420:ASP:O	1:B:461:LEU:HB2	2.20	0.40
1:C:168:PHE:CZ	1:C:229:LEU:HB2	2.57	0.40
1:C:411:ALA:HB3	1:C:414:GLN:CG	2.51	0.40
1:C:599:THR:HB	1:C:608:VAL:HG12	2.04	0.40
1:A:759:PHE:HZ	1:B:1002:GLN:CD	2.17	0.40
1:A:959:LEU:O	1:A:963:VAL:HG13	2.22	0.40
1:A:1086:LYS:HE3	1:A:1086:LYS:HB2	1.88	0.40
1:B:231:ILE:HG22	1:B:233:ILE:HG23	2.03	0.40
1:B:599:THR:HB	1:B:608:VAL:HG12	2.04	0.40
1:C:48:LEU:HA	1:C:48:LEU:HD23	1.73	0.40
1:C:374:PHE:CZ	1:C:434:ILE:HG23	2.56	0.40
1:C:375:PHE:CD2	1:C:508:TYR:CZ	3.09	0.40
1:A:206:LYS:HB3	1:A:223:LEU:CD1	2.51	0.40
1:A:349:SER:OG	1:A:451:TYR:HA	2.22	0.40
1:A:554:LYS:HA	1:A:554:LYS:NZ	2.36	0.40
1:A:806:LEU:HD21	1:A:882:ILE:HD11	2.02	0.40
1:B:110:LEU:HD13	1:B:110:LEU:HA	1.94	0.40
1:B:326:ILE:CD1	1:B:532:ASN:O	2.59	0.40
1:B:375:PHE:CD2	1:B:508:TYR:CZ	3.09	0.40
1:B:437:ASN:OD1	1:B:439:ASN:ND2	2.54	0.40
1:B:906:PHE:HE1	1:B:1049:LEU:HD11	1.86	0.40
1:C:25:THR:O	1:C:65:PHE:HA	2.21	0.40
1:C:518:LEU:HD12	1:C:518:LEU:HA	1.83	0.40
1:C:806:LEU:HD23	1:C:878:LEU:HD23	2.03	0.40
1:C:855:PHE:HD1	1:A:589:PRO:HG3	1.86	0.40
1:C:990:GLU:O	1:C:993:ILE:HG22	2.22	0.40
1:B:25:THR:O	1:B:65:PHE:HA	2.21	0.40
1:B:244:LEU:HD23	1:B:244:LEU:HA	1.87	0.40
1:B:716:THR:HA	1:B:1110:TYR:HB3	2.04	0.40
1:B:725:GLU:OE1	1:B:1064:HIS:NE2	2.54	0.40
1:B:1083:HIS:CD2	1:B:1137:VAL:H	2.40	0.40

There are no symmetry-related clashes.

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	1053/1206 (87%)	944 (90%)	91 (9%)	18 (2%)	9	40
1	B	1053/1206 (87%)	944 (90%)	92 (9%)	17 (2%)	9	41
1	C	1053/1206 (87%)	942 (90%)	91 (9%)	20 (2%)	8	37
All	All	3159/3618 (87%)	2830 (90%)	274 (9%)	55 (2%)	13	40

All (55) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	C	329	PHE
1	C	348	ALA
1	C	527	PRO
1	C	536	ASN
1	C	745	ASP
1	A	348	ALA
1	A	527	PRO
1	A	536	ASN
1	A	745	ASP
1	B	348	ALA
1	B	527	PRO
1	B	536	ASN
1	C	109	THR
1	C	559	PHE
1	C	590	CYS
1	A	109	THR
1	A	559	PHE
1	A	803	SER
1	B	109	THR
1	B	213	GLY
1	B	590	CYS
1	C	161	SER
1	C	165	ASN
1	C	188	ASN

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Mol	Chain	Res	Type
1	C	244	LEU
1	C	518	LEU
1	A	165	ASN
1	A	244	LEU
1	A	518	LEU
1	B	244	LEU
1	B	518	LEU
1	B	593	GLY
1	C	529	LYS
1	C	561	PRO
1	A	529	LYS
1	A	561	PRO
1	A	582	LEU
1	B	529	LYS
1	B	557	LYS
1	B	561	PRO
1	C	330	PRO
1	C	706	ALA
1	A	402	ILE
1	B	402	ILE
1	B	582	LEU
1	C	134	GLN
1	C	844	ILE
1	A	163	ALA
1	A	330	PRO
1	B	164	ASN
1	A	412	PRO
1	B	330	PRO
1	C	942	PRO
1	A	942	PRO
1	B	942	PRO

5.3.2　Protein sidechains ⓘ

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	925/1054 (88%)	887 (96%)	38 (4%)	30	64
1	B	925/1054 (88%)	892 (96%)	33 (4%)	35	68
1	C	925/1054 (88%)	885 (96%)	40 (4%)	29	62
All	All	2775/3162 (88%)	2664 (96%)	111 (4%)	35	64

All (111) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	C	29	THR
1	C	45	SER
1	C	55	PHE
1	C	61	ASN
1	C	127	PHE
1	C	134	GLN
1	C	164	ASN
1	C	168	PHE
1	C	200	TYR
1	C	210	ILE
1	C	216	PHE
1	C	220	PHE
1	C	265	TYR
1	C	284	THR
1	C	308	VAL
1	C	319	ARG
1	C	360	ASN
1	C	374	PHE
1	C	377	PHE
1	C	389	ASP
1	C	538	CYS
1	C	552	LEU
1	C	553	THR
1	C	554	LYS
1	C	567	ARG
1	C	584	ILE
1	C	617	CYS
1	C	709	ASN
1	C	738	CYS
1	C	759	PHE
1	C	760	CYS

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Mol	Chain	Res	Type
1	C	849	LEU
1	C	873	TYR
1	C	939	PHE
1	C	975	SER
1	C	994	ASP
1	C	1037	SER
1	C	1096	VAL
1	C	1132	ILE
1	C	1136	THR
1	A	29	THR
1	A	55	PHE
1	A	61	ASN
1	A	127	PHE
1	A	134	GLN
1	A	160	TYR
1	A	168	PHE
1	A	200	TYR
1	A	210	ILE
1	A	216	PHE
1	A	220	PHE
1	A	265	TYR
1	A	284	THR
1	A	303	LEU
1	A	308	VAL
1	A	319	ARG
1	A	360	ASN
1	A	374	PHE
1	A	377	PHE
1	A	390	LEU
1	A	552	LEU
1	A	553	THR
1	A	554	LYS
1	A	582	LEU
1	A	709	ASN
1	A	738	CYS
1	A	759	PHE
1	A	760	CYS
1	A	873	TYR
1	A	916	LEU
1	A	918	GLU
1	A	939	PHE
1	A	975	SER

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Mol	Chain	Res	Type
1	A	994	ASP
1	A	1037	SER
1	A	1096	VAL
1	A	1132	ILE
1	A	1136	THR
1	B	45	SER
1	B	127	PHE
1	B	134	GLN
1	B	168	PHE
1	B	200	TYR
1	B	216	PHE
1	B	220	PHE
1	B	265	TYR
1	B	284	THR
1	B	302	THR
1	B	303	LEU
1	B	360	ASN
1	B	374	PHE
1	B	377	PHE
1	B	390	LEU
1	B	538	CYS
1	B	552	LEU
1	B	553	THR
1	B	554	LYS
1	B	572	THR
1	B	709	ASN
1	B	759	PHE
1	B	760	CYS
1	B	786	LYS
1	B	873	TYR
1	B	939	PHE
1	B	975	SER
1	B	983	ARG
1	B	994	ASP
1	B	1037	SER
1	B	1096	VAL
1	B	1132	ILE
1	B	1136	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (22) such sidechains are listed below:

Mol	Chain	Res	Type
1	C	207	HIS
1	C	394	ASN
1	C	505	HIS
1	C	540	ASN
1	C	556	ASN
1	C	804	GLN
1	C	965	GLN
1	C	1101	HIS
1	A	164	ASN
1	A	207	HIS
1	A	540	ASN
1	A	580	GLN
1	A	965	GLN
1	A	1101	HIS
1	B	207	HIS
1	B	394	ASN
1	B	540	ASN
1	B	556	ASN
1	B	804	GLN
1	B	935	GLN
1	B	965	GLN
1	B	1101	HIS

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains ⓘ

There are no non-standard protein/DNA/RNA residues in this entry.

5.5 Carbohydrates ⓘ

There are no monosaccharides in this entry.

5.6 Ligand geometry ⓘ

55 ligands are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and

the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#$\|Z\| > 2$	Counts	RMSZ	#$\|Z\| > 2$
2	NAG	C	1312	1	14,14,15	0.39	0	17,19,21	0.81	0
2	NAG	C	1307	1	14,14,15	0.39	0	17,19,21	0.74	1 (5%)
2	NAG	C	1314	1	14,14,15	0.40	0	17,19,21	0.36	0
2	NAG	B	1304	1	14,14,15	0.38	0	17,19,21	0.54	0
2	NAG	C	1315	1	14,14,15	0.40	0	17,19,21	0.41	0
2	NAG	A	1317	1	14,14,15	0.41	0	17,19,21	0.81	0
2	NAG	A	1316	1	14,14,15	0.39	0	17,19,21	0.64	0
2	NAG	B	1311	1	14,14,15	0.38	0	17,19,21	0.54	0
2	NAG	B	1313	1	14,14,15	0.41	0	17,19,21	0.81	0
2	NAG	C	1306	1	14,14,15	0.39	0	17,19,21	0.35	0
2	NAG	A	1313	1	14,14,15	0.40	0	17,19,21	0.81	0
2	NAG	C	1305	1	14,14,15	0.42	0	17,19,21	0.70	1 (5%)
2	NAG	C	1304	1	14,14,15	0.37	0	17,19,21	0.55	0
2	NAG	A	1304	1	14,14,15	0.35	0	17,19,21	0.55	0
2	NAG	A	1314	1	14,14,15	0.41	0	17,19,21	0.44	0
2	NAG	C	1309	1	14,14,15	0.40	0	17,19,21	0.36	0
2	NAG	A	1315	1	14,14,15	0.40	0	17,19,21	0.38	0
2	NAG	C	1316	1	14,14,15	0.39	0	17,19,21	0.64	0
2	NAG	B	1315	1	14,14,15	0.39	0	17,19,21	0.39	0
2	NAG	C	1311	1	14,14,15	0.38	0	17,19,21	0.54	0
2	NAG	C	1313	1	14,14,15	0.38	0	17,19,21	0.45	0
2	NAG	B	1308	1	14,14,15	0.39	0	17,19,21	0.69	0
2	NAG	B	1312	1	14,14,15	0.40	0	17,19,21	0.81	0
2	NAG	C	1318	1	14,14,15	0.37	0	17,19,21	0.48	0
2	NAG	A	1312	1	14,14,15	0.39	0	17,19,21	0.81	0
2	NAG	B	1301	1	14,14,15	0.38	0	17,19,21	0.77	0
2	NAG	A	1305	1	14,14,15	0.41	0	17,19,21	0.69	1 (5%)
2	NAG	A	1310	1	14,14,15	0.39	0	17,19,21	0.61	0
2	NAG	A	1307	1	14,14,15	0.38	0	17,19,21	0.75	1 (5%)
2	NAG	B	1307	1	14,14,15	0.40	0	17,19,21	0.74	1 (5%)
2	NAG	B	1319	1	14,14,15	0.38	0	17,19,21	0.45	0
2	NAG	B	1305	1	14,14,15	0.42	0	17,19,21	0.70	1 (5%)
2	NAG	B	1318	1	14,14,15	0.38	0	17,19,21	0.49	0
2	NAG	A	1308	1	14,14,15	0.38	0	17,19,21	0.69	0
2	NAG	C	1310	1	14,14,15	0.38	0	17,19,21	0.61	0
2	NAG	C	1301	1	14,14,15	0.40	0	17,19,21	0.77	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#|Z| > 2	Counts	RMSZ	#|Z| > 2
2	NAG	A	1318	1	14,14,15	0.38	0	17,19,21	0.48	0
2	NAG	B	1309	1	14,14,15	0.39	0	17,19,21	0.38	0
2	NAG	B	1303	1	14,14,15	0.39	0	17,19,21	0.74	0
2	NAG	A	1302	1	14,14,15	0.37	0	17,19,21	0.97	1 (5%)
2	NAG	C	1302	1	14,14,15	0.39	0	17,19,21	0.75	1 (5%)
2	NAG	C	1308	1	14,14,15	0.39	0	17,19,21	0.70	0
2	NAG	A	1311	1	14,14,15	0.37	0	17,19,21	0.54	0
2	NAG	B	1314	1	14,14,15	0.39	0	17,19,21	0.36	0
2	NAG	A	1309	1	14,14,15	0.40	0	17,19,21	0.52	0
2	NAG	A	1301	1	14,14,15	0.40	0	17,19,21	0.76	0
2	NAG	A	1303	1	14,14,15	0.39	0	17,19,21	0.74	0
2	NAG	B	1310	1	14,14,15	0.39	0	17,19,21	0.62	0
2	NAG	B	1306	1	14,14,15	0.41	0	17,19,21	0.70	0
2	NAG	C	1317	1	14,14,15	0.40	0	17,19,21	0.81	0
2	NAG	C	1303	1	14,14,15	0.39	0	17,19,21	0.74	0
3	IDU	B	1317	-	15,15,17	0.89	1 (6%)	15,22,26	1.03	1 (6%)
2	NAG	A	1306	1	14,14,15	0.41	0	17,19,21	0.71	0
2	NAG	B	1302	1	14,14,15	0.39	0	17,19,21	0.66	1 (5%)
2	NAG	B	1316	1	14,14,15	0.39	0	17,19,21	0.64	0

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	NAG	C	1312	1	-	0/6/23/26	0/1/1/1
2	NAG	C	1307	1	-	0/6/23/26	0/1/1/1
2	NAG	C	1314	1	-	0/6/23/26	0/1/1/1
2	NAG	B	1304	1	-	0/6/23/26	0/1/1/1
2	NAG	C	1315	1	-	3/6/23/26	0/1/1/1
2	NAG	A	1317	1	-	0/6/23/26	0/1/1/1
2	NAG	A	1316	1	-	0/6/23/26	0/1/1/1
2	NAG	B	1311	1	-	0/6/23/26	0/1/1/1
2	NAG	B	1313	1	-	0/6/23/26	0/1/1/1
2	NAG	C	1306	1	-	0/6/23/26	0/1/1/1
2	NAG	A	1313	1	-	0/6/23/26	0/1/1/1
2	NAG	C	1305	1	-	0/6/23/26	0/1/1/1
2	NAG	C	1304	1	-	0/6/23/26	0/1/1/1
2	NAG	A	1304	1	-	0/6/23/26	0/1/1/1
2	NAG	A	1314	1	-	0/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	NAG	C	1309	1	-	1/6/23/26	0/1/1/1
2	NAG	A	1315	1	-	3/6/23/26	0/1/1/1
2	NAG	C	1316	1	-	0/6/23/26	0/1/1/1
2	NAG	B	1315	1	-	3/6/23/26	0/1/1/1
2	NAG	C	1311	1	-	0/6/23/26	0/1/1/1
2	NAG	C	1313	1	-	0/6/23/26	0/1/1/1
2	NAG	B	1308	1	-	0/6/23/26	0/1/1/1
2	NAG	B	1312	1	-	0/6/23/26	0/1/1/1
2	NAG	C	1318	1	-	0/6/23/26	0/1/1/1
2	NAG	A	1312	1	-	0/6/23/26	0/1/1/1
2	NAG	B	1301	1	-	0/6/23/26	0/1/1/1
2	NAG	A	1305	1	-	0/6/23/26	0/1/1/1
2	NAG	A	1310	1	-	1/6/23/26	0/1/1/1
2	NAG	A	1307	1	-	0/6/23/26	0/1/1/1
2	NAG	B	1307	1	-	0/6/23/26	0/1/1/1
2	NAG	B	1319	1	-	0/6/23/26	0/1/1/1
2	NAG	B	1305	1	-	0/6/23/26	0/1/1/1
2	NAG	B	1318	1	-	0/6/23/26	0/1/1/1
2	NAG	A	1308	1	-	0/6/23/26	0/1/1/1
2	NAG	C	1310	1	-	1/6/23/26	0/1/1/1
2	NAG	C	1301	1	-	0/6/23/26	0/1/1/1
2	NAG	A	1318	1	-	0/6/23/26	0/1/1/1
2	NAG	B	1309	1	-	1/6/23/26	0/1/1/1
2	NAG	B	1303	1	-	0/6/23/26	0/1/1/1
2	NAG	A	1302	1	-	1/6/23/26	0/1/1/1
2	NAG	C	1302	1	-	1/6/23/26	0/1/1/1
2	NAG	C	1308	1	-	0/6/23/26	0/1/1/1
2	NAG	A	1311	1	-	0/6/23/26	0/1/1/1
2	NAG	B	1314	1	-	0/6/23/26	0/1/1/1
2	NAG	A	1309	1	-	1/6/23/26	0/1/1/1
2	NAG	A	1301	1	-	0/6/23/26	0/1/1/1
2	NAG	A	1303	1	-	0/6/23/26	0/1/1/1
2	NAG	B	1310	1	-	1/6/23/26	0/1/1/1
2	NAG	B	1306	1	-	0/6/23/26	0/1/1/1
2	NAG	C	1317	1	-	0/6/23/26	0/1/1/1
2	NAG	C	1303	1	-	0/6/23/26	0/1/1/1
3	IDU	B	1317	-	-	3/9/22/29	1/1/1/1
2	NAG	A	1306	1	-	0/6/23/26	0/1/1/1
2	NAG	B	1302	1	-	1/6/23/26	0/1/1/1
2	NAG	B	1316	1	-	0/6/23/26	0/1/1/1

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	B	1317	IDU	O6-C6	-2.89	1.21	1.30

All (10) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	A	1302	NAG	C2-N2-C7	3.53	127.92	122.90
2	C	1302	NAG	C2-N2-C7	2.59	126.60	122.90
3	B	1317	IDU	O6-C6-C5	2.36	119.77	113.03
2	C	1307	NAG	C1-O5-C5	2.28	115.28	112.19
2	A	1307	NAG	C1-O5-C5	2.27	115.27	112.19
2	B	1307	NAG	C1-O5-C5	2.26	115.25	112.19
2	B	1305	NAG	C1-O5-C5	2.18	115.15	112.19
2	C	1305	NAG	C1-O5-C5	2.16	115.11	112.19
2	A	1305	NAG	C1-O5-C5	2.14	115.09	112.19
2	B	1302	NAG	C2-N2-C7	2.13	125.93	122.90

There are no chirality outliers.

All (21) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	B	1317	IDU	C3-C2-O2-S
3	B	1317	IDU	O5-C5-C6-O61
2	C	1315	NAG	C8-C7-N2-C2
2	C	1315	NAG	O7-C7-N2-C2
2	A	1315	NAG	C8-C7-N2-C2
2	A	1315	NAG	O7-C7-N2-C2
2	B	1315	NAG	C8-C7-N2-C2
2	B	1315	NAG	O7-C7-N2-C2
2	B	1309	NAG	O5-C5-C6-O6
2	C	1309	NAG	O5-C5-C6-O6
2	C	1315	NAG	O5-C5-C6-O6
2	A	1309	NAG	O5-C5-C6-O6
2	A	1315	NAG	O5-C5-C6-O6
2	B	1315	NAG	O5-C5-C6-O6
2	C	1310	NAG	C1-C2-N2-C7
2	A	1310	NAG	C1-C2-N2-C7
2	B	1310	NAG	C1-C2-N2-C7
2	C	1302	NAG	C3-C2-N2-C7
2	A	1302	NAG	C3-C2-N2-C7
2	B	1302	NAG	C3-C2-N2-C7
3	B	1317	IDU	O5-C5-C6-O6

All (1) ring outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	B	1317	IDU	C1-C2-C3-C4-C5-O5

13 monomers are involved in 22 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	C	1315	NAG	3	0
2	B	1311	NAG	1	0
2	A	1315	NAG	3	0
2	B	1315	NAG	3	0
2	C	1311	NAG	2	0
2	C	1313	NAG	3	0
2	B	1301	NAG	1	0
2	C	1301	NAG	1	0
2	C	1302	NAG	1	0
2	A	1311	NAG	1	0
2	A	1309	NAG	1	0
2	A	1301	NAG	1	0
3	B	1317	IDU	1	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less then 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

Ligand IDU B 1317
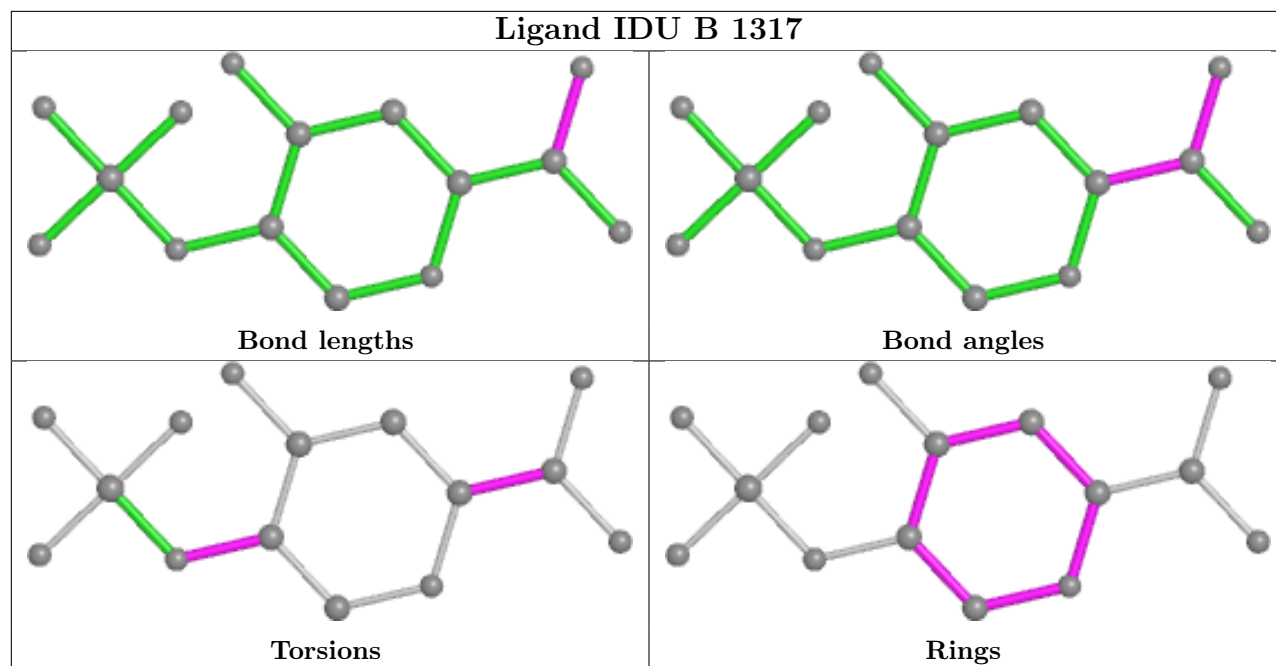
5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.